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ABSTRACT

Described is an extensive research and demonstration project in Illinois concerned with the deaf mentally ill. Purposes were to gain experience and knowledge needed to provide therapy for such persons, train professional personnel in therapeutic processes, establish inpatient and outpatient facilities in the State Mental Health system for such patients, and develop and test research hypotheses related to concept formation, symbolic representation, prevention of mental illness, and techniques of rehabilitation. Diagnostic studies to determine commonality of syndromes and of psychodynamics and responses to various therapies were conducted with deaf mentally ill persons being treated in various situations. Findings are presented and recommendations made. Sections deal with inpatient psychotherapy, group therapy, family history, private office treatment, deaf children, a preschool nursery for deaf children, cognitive process in deaf and hearing subjects, EEG changes under differing auditory stimulations, and EEG findings on deaf psychiatric patients. Publications from the project are listed. (KW)

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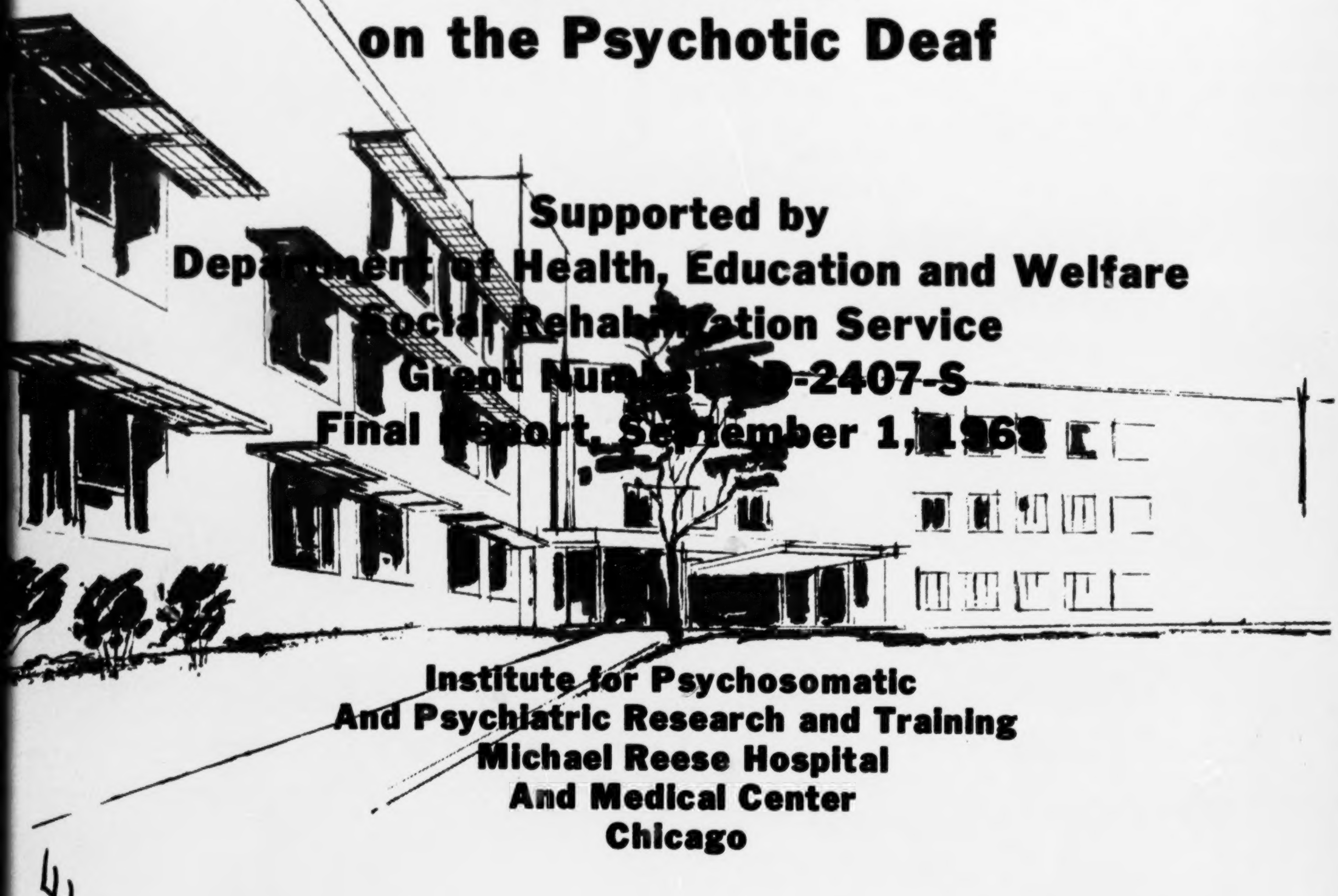

Psychiatric Diagnosis, Therapy and Research on the Psychotic Deaf

Supported by
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Social Rehabilitation Service
Grant Number [illegible]D-2407-S
Final Report, September 1, 1968

Institute for Psychosomatic
And Psychiatric Research and Training
Michael Reese Hospital
And Medical Center
Chicago

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1. Significant Findings for Rehabilitation and Social Service Workers

AT PRESENT the States are providing very little treatment for deaf mentally ill children and adults. Custodial care in state hospitals is given to those deaf persons whom society is unable to tolerate, but this care is more a protection and convenience for society than a treatment effort in the interest of deaf patients. Furthermore, misdiagnoses by psychologists and psychiatrists who confuse the language disability, vocalizations, and educational lag due to deafness with mental retardation, schizophrenia and autism have led to the hospitalization of deaf individuals whose problems were increased, rather than alleviated, by this inappropriate placement.

We *recommend* that several steps be taken to correct this lack of "care" of mentally ill deaf children and adults. These must be based primarily on preventive measures because results of psychotherapy in its present stage of development are not encouraging. With this as a frame of reference, the following measures are recommended:

1. Deaf patients presently in state hospitals must be identified (at this time most are not) and grouped. This grouping should be done by forming small units of 25 or 30 patients in hospitals near large population centers. These units should serve adults and children needing inpatient services, as well as those needing outpatient treatment. Such a centralization of facilities makes possible the efficient use of the limited number of qualified professional staff available to work with disturbed deaf people. It enables community specialists in deafness, such as educators, rehabilitation counselors, and others to coordinate their efforts at returning and/or maintaining deaf patients in the community. By the same token, the Departments of Mental Health would then be in a position to offer schools and other agencies treatment for children instead of anti-therapeutic isolated institutionalization. Then, and only then, will the concept of community mental health, which is the basic rationale for the present program of the State Departments of Mental Health, be meaningful in terms of the deaf youth and his parents.
2. Regular summer institutes concerning deafness and its effects are needed to educate the mental health professions (psychiatrists, psychologists, social workers, etc.) that will serve deaf children and adults in the States. The problems of deafness, and the related brain damage which sometimes accompanies it, require greater ratios of psychiatrists, psychologists, and social workers than are required for the general population. In order for these persons to function effectively, it is imperative that in addition to being fully qualified in their specialties that they be trained to work with deaf people.
3. Universal counseling for parents of young deaf children must be started in conjunction with planned early identification and education. In such counseling, great care must be taken to develop in parents a realistic acceptance of what deafness is and how to cope with it in ways that help the deaf child and yield paternal satisfactions. Parents should be made aware of the great difficulties created by deafness in the development of communication skills, educational achievement, and socialization.
4. A special type of counselor-teacher needs to be prepared for in home training and parent counseling work with deaf infants, preschoolers, and parents. Good counseling and training in the first few years of life might do much to alleviate the effects of deafness including its effects on

emotional adjustment.

5. A major goal for the deaf child is the development of language and communication. This is necessary for good emotional and occupational development. Since purely oral communication is extremely limited in the deaf child during his early years, and often throughout his life, consideration must be given to the use of the language of signs and finger-spelling by the child, his parents, and all those who work directly with him.

Development of some oral communication should remain a goal and reasonable efforts should be made to develop it to its fullest extent in each child. However, this should be supplemented to whatever extent necessary by manual communication with all deaf children at all ages. It follows from this, that all persons who work directly with deaf persons, including teachers, should have reasonable proficiency in manual communication.

Psychiatric Diagnosis, Therapy and Research on the Psychotic Deaf*

Final Report, September 1, 1969

By

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Frank Sullivan, President of National Fraternal Society of the Deaf and the entire Society.

Bernard Rubin, former Zone Director of State Department of Mental Health.

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Dr. William M. Usdane, Chief, Division of Research and Demonstration Grants, Rehabilitation Services Administration, HEW.

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Oakton School, Evanston, Illinois; Dr. R. Traub, Principal.

University of Chicago Laboratory High School; R. F. Aubrey, Guidance Director.

Chicago City College; Dr. Ava Billimoria, Assistant Professor in Psychology.

5. Foreword

by: Roy R. Grinker, Sr. , M.D.

The Development of the Grant

IN 1965 DEPAUL University received a planning grant from the Vocational Rehabilitation Agency for the purpose of establishing a coordinated training program for professionals to help them work with persons handicapped by defects in speech and hearing. Dr. W. D. Phillips of DePaul and Dr. M. Vernon, representing the planning grant, arranged for a number of meetings including members of the staff and administration at DePaul, the Hearing and Speech clinic at Michael Reese and several Reese neurologists and psychiatrists.

William Silverman, the Executive Director of Michael Reese Hospital and Medical Center, became intensely interested in the subject. This ultimately led him to steer a donation of one million dollars from the Siegel family towards the purpose of building at Michael Reese a free-standing institute for the study of speech and hearing disorders. Occupancy will be possible during early 1970.

In the meantime several interested persons including the writer, who had been "infected" by the enthusiasm of those concerned with deafness, visited the Columbia University unit for the study and treatment of deaf adults at the Rockland, New York, State Mental Hospital. What we saw and heard from Drs. Altschuler and Ranier and their staffs stimulated me to think seriously about a program of research on the psychotic deaf. Then after a visit with Miss Mary Switzer, the Director of the then V.R.A., and her staff in Washington, and consultations later with Dr. William Usdane, we prepared an application for support which was approved for three years from September 1, 1966 to August 31, 1969. This report is a professional accounting of our activities.

The Problem of Deafness and Mental Illness

Dr. Franz J. Kallman, nationally renown psychiatrist and geneticist who established the world's first and only state mental hospital program for deaf mentally ill patients, described (1963) the backdrop of "professional fragmentation and public indifference" he faced when he began his pioneering work in 1955 as follows:

> "To the clinical psychiatrist, deaf adolescents and adults represent one more minority group whose members are difficult to reach, are given to paranoid reaction formation, and lack adequate treatment facilities to about the same extent as their hearing counterparts. If the psychiatrist happens to be in an administrative position, he may add regretfully that statistical data on the mental health needs of widely-scattered deaf families are not well enough documented to permit comprehensive programs for specialized treatment and counseling services."

Within six years Dr. Kallman and the New York Psychiatric Institute at Columbia had sufficiently informed federal research agencies and New York State mental health leaders about deafness and the feasibility of meeting the psychiatric needs of deaf people to the point that New York had in operation the first embryonic mental health facility for grouping and serving deaf patients. Within the last five years psychiatrists from all over the world have come to observe the program. Two books and numerous professional articles have been written about it, and New York State by virtue of more efficient use of staff and patient grouping, has provided deaf psychotic patients a therapeutic setting in contrast to what had been custodial isolation.

The major problem Dr. Kallman faced was the total lack of insight into the implications of early profound hearing loss which characterizes all but the most intuitive clinician or the person with extensive firsthand experience with the deaf. Deafness which occurs in the development of the child prior to his acquisition of language (two or three years of age) leaves the youth at beginning school age with no verbal language. He does not know his own name, the names of the foods he eats or the clothes he wears. His communication with his parents, siblings and peers is limited to gross gestures and crude vocalizations.

The child's educational task when he begins school is best understood by an analogy with a normally hearing child of six who is put into a glass soundproof room with his teacher on the outside.

Lessons, in this hypothetical stituation, must be conducted through the soundproof glass in a foreign language, and English may not be used as a frame of reference. If one can understand the learning problem such a situation would create in teaching syntactical aspects of language, abstract ideas, and basic day-to-day information, some empathy with the deprivation of deafness is established.

The psychiatrist, familiar with the role of communication in parent-child interaction and aware of the part played by language in bringing about conscious awareness of basic psychological developmental changes and necessary cathexes, is immediately able to grasp some of the more salient psychiatric implications of deafness.

The average deaf youth has all of these problems, plus those of being in a minority group that is more often the butt of crude humour than of understanding. He is generally forced to communicate through a "foreign" language and modality, his natural language (the language of signs) being forbidden. This means that his reception of language is dependent upon lip-reading despite the fact that 40 to 60 percent of the sounds of English are homophonous, i.e. they look just like some other sounds on the lips. At best, he can perceive less than half of what is said to him which means his understanding is perhaps 10 to 20 percent. In expressing himself, he must try to make sounds he cannot monitor by hearing. Using kinesthetic and visual clues only in trying to make correct speech sounds is like playing a violin with earplugs.

A major point in describing these aspects of early profound hearing loss is to establish that deafness inevitably makes its victim a social isolate. The deprivations of the transactions mediated through audition also arrest development in many other ways.

Placement in a large psychiatric hospital compounds the isolation because the deaf patient generally cannot communicate satisfactorily through speech and lipreading and he is not grouped with deaf people with whom he could communicate in the language of signs and with whom he could take the necessary first step in treatment, i.e. the establishment of social ties. This psychic trauma is compounded by the fact that none of the professional staff can communicate adequately with him by writing, or speech and lipreading, due to his deprivation of verbal language.

The planning grant for the present research suggested a close affiliation between *DePaul University* and Michael Reese. Unfortunately, stipulations were made in this grant without consulting those in authority at Michael Reese, by Dr. W. D. Phillips, then of DePaul, for programs not feasible in a hospital setting. Thus, Michael Reese assumed the mental health aspects of the original planning and has cooperated with Jewish Vocational Service in placement, job counseling, and work-training needs of deaf patients. Reese has continued to provide practical experience and lectures for psychiatrists taking the DePaul course on deafness.

The State of Illinois, Division of Vocational Rehabilitation, under the direction of Albert Slicer, for two years supported the costs of five beds for the hospitalization of psychotic deaf patients. Unfortunately because the source of its funds from the Federal government decreased markedly, D.V.R. could not furnish any support during the third year. Fortunately we were able to utilize our *N.I.M.H. supported clinical research beds* during the terminal year *(Grant MH-05519).*

The Department of Mental Health of the State of Illinois cooperated with us to its fullest capacity, permitting us to survey the state hospitals for deaf patients, facilitating transfer of patients to and from our facility. In turn our project personnel furnished services for those caring for deaf patients.

The lack of documented data regarding incidence of deaf patients diagnosed as psychotic is perpetuated by antiquated systems of recording. There was great variation as a function of the hospital reporting in the estimated prevalence rate of hearing handicapped, suggesting variable criteria for identifying these patients. The overall intake figure of approximately 259 hearing handicapped admissions per year indicates a large sample. Dr. William Plotkin estimates that hearing problems in Illinois state hospital patients are seven times more frequent than in the general populations.

We had received assurances that the personnel working in our deaf project would be phased gradually into the state hospitals and completely transferred at the termination of the grant. For several reasons, despite our repeated urgings and presentations, this could not be accomplished. After Dr. Harold Visotsky resigned as Director of the Department of Mental Health in April 1969 there was no more hope. Therefore at the termination of this grant the personnel of the project left for employment elsewhere.

It was fortunate for us that Dr. M. Vernon accepted the position of Project Director, resigning from DePaul. With his vast knowledge of problems of the deaf and his wide acquaintance with professionals working in the field, we were able to recruit good people and proceed quickly to begin our studies. Coordination of our work with other agencies, and even with our own internal sections, was no easy job, but it was accomplished efficiently.

The project group met once a week for a research conference chaired by me. Professionals and psychiatric residents in training within the Institute, who were not paid by the grant became interested and began individual research projects. Those actually engaged in our planned research have contributed individual sections for this report.

Ours was not a rigid design oriented toward accumulating statistics, except for a few isolated investigations. We were studying problems of psychotic deaf adults, and eventually problems of prelingually deaf children and their families, by methods of observation and description to develop, when possible, testable hypotheses. Each worker described his observations to the whole group. This resulted in a sharpening of definition, and a shift, when necessary, of techniques. We never locked ourselves into a rigid design. Therefore few statistics are presented. Presented instead are more clinical observational data with somewhat gross conclusions.

It will be apparent that our material is divisible into categories depending on a particular frame of reference. For example, understanding the behavior of adults and how they got that way, attempting to understand the development of thinking in the child, and determining the influence of parents and other environmental structures on the lives of the deaf.

On the other hand, how do we treat the disturbed deaf adult, how do we treat the anxious, angry parents of deaf children so that their children may develop reasonably able to cope in a hearing world? How do we follow the deaf inpatient in clinics, rehabilitation centers, jobs, etc. and how do we extend our influence into the larger social systems, schools, etc?

Thus we studied our material from both a practical and theoretical approach. We were interested in the practical aspects of diagnosis, treatment and prevention of psychiatric disorders in the deaf. We were involved in studying ego functions in the adult and the growing child, how the deaf child thinks without words, how he solves problems, and what are the dynamic relations between mother and deaf child that later become internalized as nuclei for health or pathology. We could not answer many of these questions but at least they were raised.

Following are the *service projects continuing* after the termination of the grant:

1) Preschool program for deaf children and their families described in the report will continue and plans are being considered to expand it into a continuous, complete, preschool through high school facility. Three Chicago school districts have decided to open preschools modeled on ours, and Dr. Mindel and others of this project will consult with these districts.
2) Mental health services for deaf outpatients will still be available on a limited basis at Michael Reese Hospital from Dr. Mindel and Miss Collums, a psychiatrist and social worker respectively, who are fluent in sign language. Both received extensive experience with deaf patients during the Project.
3) The Lake County Mental Health Clinic in a suburb of Chicago, at which Dr. Harry Easton of this Project will be Chief Clinical Psychologist, will offer outpatient services to deaf children and adults. Dr. Easton is fluent in sign language and has extensive experience in clinical psychology and deafness.

4) The guidance and communication classes for families of deaf children and for adults which served over 250 clients during the Project have been taken over by the Clearbrook Center and will continue to operate with our support.

5) We will continue the cooperative services established with the Jewish Vocational Service during the tenure of the project:
   a. Michael Reese Hospital will refer to JVS appropriate deaf patients who are ready for vocational rehabilitation and planning services.
   b. JVS staff will be invited to participate in staffings of deaf patients who are being considered for referral to JVS.
   c. JVS will refer to Michael Reese deaf clients seen in its program who are considered to be severely emotionally disturbed and/or psychotic and who need inpatient hospital care.

Following are a few *research projects* which will continue beyond the life of the project. When the Siegel Institute is completed we expect that many others will be initiated.

1) The study of the evolution of language in the deaf child.
2) The development of methods to trace the emotional development of deaf children.
3) The study of cognitive development in deaf children.
4) Effects of retention interval on organizational characteristics of free recall in the deaf.
5) Effects of intrapair interval on comparative judgments of numerosity in the deaf.
6) Effects of perceptual pretraining on discrimination shift learning in deaf children.
7) Scaling of numerosity by deaf children.

6. Abstract

DEAF STATE hospital patients, deaf persons becoming disturbed in the community and requiring temporary hospitalization, deaf patients treated in a community psychiatric clinic and in private practice, were studied diagnostically to elicit commonality of syndromes and of psychodynamics and responses to various therapies. Deaf children and their parents, as well as the families of disturbed adults, were also investigated.

The difficulty in utilizing our standard nomenclature for over half our population (the other half were schizophrenics) suggested that the borderline syndrome was the most appropriate diagnosis. Precipitation of the psychiatric illness occurred after separation or loss of object-relations or after physical disease or injury. Insidious onset characterized the schizophrenics, but all patients had a premorbid marginal adjustment. Parental neglect and faulty education even for persons of average intelligence took its toll on poor systems of communication and severe ego defects.

Individual therapy was handicapped by poor communicative skills on the part of the patient and fear of affect requiring interpretations only in concrete, concise statements in present tense. Active participation by the therapist in patient activities did achieve some results. Group therapy could not be formalized but required the framework of a common task.

Deaf patients usually have not experienced a mourning process for their absent hearing but instead have established firm defenses of isolation, denial, depression and fear of intrusion. Their families "used" them from childhood on for their own emotional problems, either expressing guilt or anger, and rarely learning manual language.

Studies of deaf children reveal their potentiality for successful development of concept formation, language and writing skills. They are being educated in small groups by new methods – a graded system of combinations of oral, manual and written communications. Mothers are being taught to become ancillary educators for their children in the same settings.

7. The Final Report

by McCay Vernon, Ph.D.

Background Information

THE WORK to be reported here grew out of a planning grant (RD-2407-S) from the Rehabilitation Services Administration for the purpose of developing deeper understanding of deafness and in order to study the needs of deaf people in the region centering around Chicago. Under the auspices of the Planning Grant, Dr. Roy R. Grinker, Sr., Director of the Psychiatric and Psychosomatic Institute of Michael Reese Hospital, visited the New York Psychiatric Institute program for the deaf. Here he observed the therapy and research and discussed with Drs. Rainer, Altshuler and other staff, possible research and service relating psychiatry and deafness. Further study was undertaken, including an indepth investigation of Dr. Hans Furth's research. Both Furth's work and that of the New York group was supported by the Rehabilitation Services Administration then known as VRA.

These observations and readings indicated the theoretical possibilities of studying deafness and the potential contributions such studies might make, not only to deaf people, but to an understanding of human behavior in general.

At a practical level a survey of local and state mental health services indicated clearly that there were no adequate facilities to serve the psychological and psychiatric needs of the deaf adult or child. Nor were there psychotherapeutic or training facilities for mental health personnel. Existing evaluation services were poor and there was need for improved vocational guidance. As a result many deaf persons have been placed in state hospitals for the mentally ill for custodial care.

Based on the existence of practical needs for services and the research potential of the field of deafness, Dr. Grinker made a personal commitment and a commitment of the Psychiatric and Psychosomatic Institute (P&PI) to a three year study. Before proceeding further he negotiated with the State Department of Mental Health through Dr. Bernard Rubin, then Director of the Zone in which P&PI is located, and later with Dr. Harold Visotsky, then State Director of Mental Health for Illinois. From them he obtained a commitment from the Department of Mental Health to take over post-grant responsibility for diagnosis, therapy, and rehabilitation of psychotic or severely disturbed mentally ill deaf persons if P&PI was awarded a grant to begin this work. This commitment was made with implementation to occur during the three years of the proposed grant. It was also agreed that patients from state hospitals could be transferred to Reese for treatment and study.

Next Dr. Grinker conferred with Miss Mary Switzer, Dr. Garrett, Dr. Usdane and others of the Rehabilitation Services Administration to determine the feasability of support for work in deafness. Encouragement was given, whereupon Dr. Grinker applied for, and was awarded, a three year research and demonstration grant for the study of psychosis and deafness.

Statement of the Problem

The problem of deafness and mental illness is two-fold. First, there is the aforementioned lack of mental health services and trained professional personnel without which, service to the deaf mentally ill are impossible. Secondly, there is a basic lack of understanding of the effect of deafness on human behavior which results in severe psychological and educational damage to deaf persons. This starts with their earliest family and school relationships.

Upon the broad framework of these theoretical and practical considerations and needs, the four basic purposes of the research and demonstration project were established:

1. To gain the experience and knowledge needed to provide therapy to deaf persons who are mentally ill. This work would build from, and add to and/or modify, the pioneering efforts of the Rainer-Altshuler work in

New York.

2. To train professional personnel in the mental health field to provide therapeutic services for deaf patients.
3. Establishment in the State Mental Health system of inpatient and outpatient facilities for the deaf and the training of personnel to staff them.
4. The major research emphasis of the first year was the development of research hypotheses regarding deafness as a variable in human behavior, hypotheses which were then tested during the remaining period of the grant. Concept formation, symbolic representation, prevention of mental illness and techniques of rehabilitation were the major areas in which hypothesis development was pursued.

Results from this work were intended to specifically benefit deaf mentally ill persons in Illinois and their families. The preventive aspects should be of value to all deaf people in other states now as well as in the future. At a less specific level, the findings of the research and the prototypic models developed for treatment and prevention should have national and international value to deaf people and rehabilitation professionals in many disciplines whose work is with deaf clients. For those deaf persons in Illinois it is intended that treatment units be established in the State Mental Health System.

Review of Relevant Literature

Mental Illness

Psychosis. One approach to the understanding of people who are deaf is to examine the nature and the degree of mental illness among them. Studying the pathological is a traditional and effective approach to understanding normal function.

The only extensive study of psychotic illness among the deaf is that done in New York State by Rainer, et al (1963). This research group has examined and compared the kinds of psychotic illnesses present among the deaf patients in state hospitals to those found among the other patients. Their major finding was that schizophrenia, which accounts for over half of all hospitalized psychotic patients, was not significantly higher among the deaf admissions to the hospitals than among the hearing admissions. However, the deaf patients tended to stay in state hospitals longer. Their communication problems made them custodial, not treatment, cases (Rainer, et al, 1963, p. 202).

An atypical finding about the deaf psychotic population was that five percent of those in state hospitals were found to have retinitis pigmentosa (Ushers Syndrome), a genetic condition involving deafness, progressive blindness, and aphasoid problems. Sometimes mental deficiency is present as an additional feature of the disease (Rainer, et al, 1963, P. 201).

The age-old-concept that paranoid schizophrenia and generalized paranoid patterns are more common among the deaf than the hearing was not substantiated (Rainer, et al, 1963, P. 201). The low percentage of the deaf having severe endogenous depression was another finding which did not correspond to the folklore about traits of deaf people (Rainer, et al, 1963, p. 201).

Based on this extensive study of a well selected sample of the New York State deaf population, the basic conclusion was that psychotic processes such as schizophrenia were essentially the same among the deaf as among the hearing. Certain kinds of organic psychoses, impulse control disorders, and cases of primitive personality development were more common in deaf mentally ill persons. Alcoholism and depressive psychoses were reported to be less prevalent.

Matzker (1960) in Germany, in contrast to the New York group, found schizophrenia more common among the deaf, but his study was far less complete. Cases of hearing loss associated with the aging process (presbycusis) were also included. They represent a much different group than the persons referred to in the New York study and in this chapter.

At the Psychosomatic and Psychiatric Institute of the Michael Reese Hospital and Medical Center, research on psychosis and deafness suggested that although paranoid schizophrenia may not be more prevalent among the pre-lingually deaf it may be more frequent among the adventitiously deafened and the hard of hearing than among the general population.

Lesser Mental Illnesses. Little is known about neuroses, character disorders, and other mental problems not considered psychoses. These kinds of disorders are not easy to identify in a deaf population. Thus far the only effort to do this has been through the New York Project's outpatient clinic in a series of several related investigations.

One, a study of 51 deaf persons indicted for various offenses (Rainer, et al, 1963, p. 143), indicated that the largest number, 19, were sex offenders, eight were charged with assault, seven with disorderly conduct, and the rest were booked for burglary and theft, murder, manslaughter, forgery, and dope peddling. Misdemeanor charges involved vagrancy, reckless driving, shoplifting, and bookmaking. These findings are difficult to interpret meaningfully as the sample is not known to be representative or random and no baseline data is provided for comparison.

Major problems in the total New York outpatient clinic population were acute psychiatric illness, homosexuality, poor work adjustment, social conflicts, and family problems (Rainer, et al, 1963, pp. 156-157); Schizophrenic illness accounted for 57.5 percent and passive-aggressive personality disorder for 20.4 percent (mostly passive dependent type).

Overt homosexuality, usually in the framework of a dependent personality, was the predominant feature in 11.4 percent.

Other common syndromes were anti-social reactions, intellectual subnormality, involutional disturbances, situational reactions, and "primitive personality" (Rainer, et al, 1963, p. 157). This last category is a nosological term used specifically for certain types of deaf patients when there is normal intellectual potential coupled with an almost total lack of verbal or manual language. The response of these patients to everyday events is as if there is a continual emergency. Terje Basilier (1964), the Norwegian psychiatric authority on deafness, covers this syndrome and a number of other reactions to congenital deafness under a broader rubric – "surdophrenia."

With reference to the communication difficulties imposed by deafness, the New York psychiatrists and psychologists found that over three-fourths of deaf patients could not even be approached in treatment except by using the language of signs (Rainer, et al, 1963, p. 160). This was true despite the fact that a high proportion were college educated (Rainer, et al, 1963, p. 163).

Brain damage plays a major role in a significant number of the behavior disorders in deaf persons. Rainer, et at, note its role in psychoses in their discussion of retinitis pigmentosa. Evern (1961, 1966, 1967b, 1967c, 1967d, 1967e), in a series of articles on sequelae of major causes of deafness, has demonstrated that the organic residua of these etiologies account for an appreciable amount of both psychotic and other lesser mental disorders.

A few tenuous generalizations can be drawn from the few studies reported and the authors' clinical experience. First, impulse control problems and their related syndromes are more common among the deaf. Second, there is frequent lack of insight with externalization of blame for psycho-social difficulties. As a result, conscious anxiety is not present as frequently, and motivation for treatment sometimes is minimal.

Organic Factors

Leading causes of deafness are also major etiologies of brain damage. This is a critical factor for consideration in any "psychology of deafness" (Heffernan, 1955; Vernon, 1961). It means that behavior noted as characteristic for deaf persons may not be caused by deafness at all as has been generally believed. It may be due to an interaction between central nervous system damage and deafness. Apart from the very important theoretical implications, an awareness of concomitant brain injury should be considered in formulating therapeutic approaches, in interpreting data, and in developing appropriate modifications in standard teaching techniques. For this reason, attention will be devoted here to a discussion of some of the conditions which cause deafness and the behavioral processes found to be related to these conditions.

Maternal rubella. Since the early 1940's it has been known that maternal rubella (German measles) in pregnancy, especially if it occurs during the first three months, often results in defective children – deafness being the most common handicap (Campbell, 1961; Jackson & Fisch, 1958). Most early studies indicated that between 12 and 19 percent of post-rubella children are deaf (Campbell, 1961; Jackson & Fisch, 1958; Manson, Logan, & Loy, 1961; Signurjonsson, 1963). Recent work (Ward & Moore, 1968) suggests that much of the deafness which has heretofore been ascribed to unknown factors is actually a result of subclinical prenatal rubella.

The behavioral characteristics most often reported in post-rubella deaf youths are restlessness, hyperactivity, distractability, and impulsiveness (Jackson & Fisch, 1958; Levine, 1951; Myklebust, 1960, P. 36).

Meningitis. Meningitis, an inflammatory condition of the protective covering of the brain, is the leading post-natal cause of deafness among school age children. The prevalence is generally reported as 8 to 16 percent (Barton, 1962; Brian, 1963; Danish & Tillison, 1963; Grinker, Bucy & Sahs, 1960, p. 82; Kelley, 1964, p. 36; Shumbaugh, 1928).

In recent years improvements in medical treatment have dramatically reduced the meningitis mortality rate from 50 to 80 percent to 13 to 21 percent, with 3 to 5 percent of the survivors left deaf. (DeGraff & Cregar, 1963, p. 244; Ford, 1960, pp. 546-580; Swartz & Dodge, 1965).

In addition to a causative role in deafness, meningitis is a major etiology of brain damage with between 15 to 71 percent of survivors left with major neurological sequelae (DeGraff & Cregar, 1963, pp. 243, 253; Kelley, 1964, p. 36; Grinker, et al, 1960, p. 822; Swartz & Dodge, 1965). A significant effect of modern and improved treatment is that very young children, especially prematures and full term neonates who previously died from the disease, now survive. However they frequently have severe residuals such as deafness and other neuropathology (Ford, 1960, p. 537; Kelley, 1964, p. 4; Nelson, 1959, p. 344) (Vernon, 1966; 1967e).

Prematurity. It is well-known that the mortality rate for prematurely born infants has been greatly reduced (Hardy & Pauls, 1959; Nesbitt, 1959). These surviving children often have serious neurological, psychological, educational, and communicative disorders (Bishop, 1964; Bordley, 1962; Eames, 1955; Hardy & Pauls, 1959; Knobloch, Rider, Harper, & Pasamanick, 1956; Lubcheno, Horner, Reed, Lindall, Mix, Metcalf, Cohig, Elliott, & Bourg; Nesbitt, 1959; Silverman, 1961). One aspect of the present research was an investigation of possible relationships which might exist between prematurity, deafness, and psychological functioning.

Heredity. It is difficult to establish with certainty the proportion of deafness caused by genetic factors. Estimates vary from 11.5 to 60 percent (Brill, 1961; Miller, 1965; Sunk & Kallman, 1963; Vernon, 1966). Very few studies have been done on the adjustment patterns of youths with genetic deafness. Brill (1960) found them to be either very well-adjusted or below average in adjustment with relatively few being average. Birch & Stuckless (1965) found them to be more satisfactorily adjusted and better academic achievers than most other deaf youth.

From these limited data and from frequently reported anecdotal observations, as a group hereditarily deaf children seem to be better adjusted than most deaf children. The exceptions to this are those in whom the genetic combinations result in other somatic pathology such as retinitis pigmentosa (Ushers Syndrome).

Serological Complications. Complications of Rh factor (erythroblastosis fetalis) are the foremost perinatal causes of deafness. They account for three to four per cent of the profound hearing losses found among school age children (Byers, Paine, & Crothers, 1955; Robinson, 1964; Vernon, 1966). A recent study (Vernon, 1966) indicates that the mean IQ scores of Rh deaf children are lower than those expected in the general population. Over-all educational achievement is slightly retarded, with special difficulties in language.

Aphasia or aphasoid conditions are often present as complicating factors in language training (Goodhill, 1956; Myklebust, 1956; Rosen, 1956; Vernon, 1966).

About half of the youths whose deafness is due to Rh factor have cerebral palsy. In addition, another one-third give psychodiagnostic indications suggesting brain damage (Vernon, 1966). Others have reported similar findings based on their clinical experience (Blakely, 1959; Byers, et al, 1955; Flower, et al, 1966; Hardy & Pauls, 1959; Goodhill, 1956; Myklebust, 1960, p. 45; Rosen, 1956).

Considering the degree of neuropathology and multiply-handicapping conditions present, there is surprisingly little serious psychological maladjustment compared to other etiological groups of deaf children. However, many almost classically demonstrate the behavior pattern of the "Strauss Syndrome" (Vernon, 1966).

Research has not been done to determine the prevalence and sequelae of other blood incompatibility diseases relative to deafness, although it is believed that ABO complications result in hearing loss and sequela similar to those associated with Rh factor.

Other eitologies. Causes of from one-third to one-half cases of deafness are unknown. Conditions such as head injuries, encephalitis, viral infections, toxins, polio, and common childhood disease combine to cause about 10 percent of deafness (Vernon, 1966). Some of these, encephalitis and head injuries for example, are known to be associated with chronic brain syndromes, but there is little data on the behavioral manifestations of these syndromes in deaf children.

Summary. Etiologies of deafness have been reviewed more carefully than might have been expected in a chapter on psychological aspects of deafness, because these conditions have considerable influence on the behavior of a large number of deaf children. This information can be of great value if correctly used in diagnosis, therapy, and prevention.

Cognitive Functioning

In recent years research psychologists and linguists have conducted investigations of the cognitive functioning of pre-lingually deafened persons (Blair, 1957; Blauton & Nunnally, 1964; Doctor, 1959; Furth, 1966; Heider & Heider, 1941; Kates, Kates, & Michael, 1962; McNeil, 1965; Oleron, 1953; Rosenstein, 1960; Vernon, 1967; Yonniss & Furth, 1965). Most of this work has been directed at determining relationships between verbal language and thought processes.

Pre-lingually deafened children have no verbal language until they begin school, and they are generally severely retarded in language development even as adults. Consequently, they offer an excellent sample for investigation of relationships between verbal language and thought. For those interested in the psychological functioning of the deaf this work has major importance.

Well-documented studies suggest that language may not be a necessary prerequisite for the occurrence of highly developed intellectual processes (Furth, 1966; Rosenstein, 1960, 1961). The significance of these findings rests in their demonstration that there is a far greater potential for intellectual growth and cognitive development among pre-lingually deafened children than had been previously attributed.

Description of the Setting

Aspects of the research were carried on throughout the State of Illinois and in part at the California School for the Deaf, Riverside. However, the major phase of the inpatient and outpatient diagnoses was done at the Michael Reese Hospital and Medical Center.

Michael Reese, located on the south side of Chicago, is composed of approximately 1100 beds and is still in the process of expansion. It is known for its adequate patient care, its training facilities in all branches of medicine and for its research institute. The hospital has recently become affiliated with the University of Chicago Medical School.

The Institute for Psychosomatic & Psychiatric Research and Training (P&PI) is located on this campus. It consists of 80 beds devoted to the care of varying degrees of disturbances in human beings. Its function includes training for all disciplines of the mental health professions. It also contains numerous laboratories for experimental and empirical research. In the 20 years of its existence it has produced over 400 research reports, including several books. It is composed of a multidisciplinary team, devoted to teaching, care of patients, and research.

Five beds in which the psychotic adult deaf patients were housed were set aside in the Psychiatric Institute. These were scatter-beds. This was necessary in order to hospitalize psychotic deaf with varying behavioral manifestations on the five Institute nursing units which are graded according to degrees of disturbances. The patient population for study was unlimited, and our cooperation with the State insured the transfer of a constant stream of patients into our beds when requested. Outpatients and their families were seen for diagnosis and therapy in office space provided at the Psychiatric Institute.

A major part of the work with deaf children and their parents is being done in conjunction with the Henner Hearing and Speech Center of Michael Reese directed by Dr. L. Stein. Henner is a fully equipped multidisciplinary diagnostic, therapy, and research center active in the field of deafness.

Methodology

(a) Project Program and Professional Staff

A major part of the program was the inpatient and outpatient therapy and diagnosis. Five beds were set aside in the Psychosomatic & Psychiatric Institute of Michael Reese for the exclusive use of mentally ill deaf persons needing hospitalization. These patients were provided individual psychotherapy on a three times a week basis, and twice weekly group therapy, in addition to the regular care provided all patients. Upon discharge into the community, outpatient therapy was provided by the same doctor who had seen them as inpatients. There was no charge to patients for these services.

In addition to after-care therapy, the outpatient clinic was available for diagnostic services, counseling, or in some cases regular psychotherapy, to any deaf adult or child with possible psychological disturbance from Chicago or adjoining areas. There was no charge to the patient for any of these services.

Over and above this diagnostic and therapeutic service the outpatient clinic served the Division of Vocational Rehabilitation's clients. Its staff surveyed state mental hospitals to locate and provide treatment for deaf persons in these facilities. Other agencies which regularly referred clients, or who received consultation, were local schools, temples, the courts, churches, jails, Jewish Vocational Service, private hospitals, private physicians, etc.

A unique and original program for deaf children and their families was established in conjunction with the Henner Hearing and Speech Center of Michael Reese. Here deaf children were provided with the first combined system (finger-spelling, language of signs, and oral) nursery program in the world. This service for the children was combined with twice weekly counseling and guidance of the parents as part of an overall prototypic prevention program designed to be generalized to any country where there are young deaf children.

Another basic part of the program was extensive research on language development, cognition, and learning in deaf persons. Most of these studies involved non-psychotic deaf samples. Some of these investigations have already been reported in professional journals.

The role of organic factors in mental illness and other aspects of behavior and learning in deaf people represented another phase of the research program. Much of this work was begun during the Planning Grant period and completed in early stages of the present grant.

In order to prepare professional staff, parents, and others to communicate with deaf persons, classes in finger-spelling and the language of signs have been established in the hospital and throughout the community. These were taught by persons, not only qualified to teach the necessary communication skills, but who were sophisticated about deafness and mental health problems. Thus, this program, dealing as it did with professionals and parents of deaf children, served both a preventive function and the function of public education about deafness.

The professional staff of seven consisted of psychiatrists, clinical and experimental psychologists, a social worker, and a teacher. In terms of a multidisciplinary approach one of the major advantages of the Michael Reese setting was the ready availability of a wide range of highly qualified professional staff. For example, part of the work on Usher's syndrome involved project staff plus a geneticist, biochemist, ophthalmologist, audiologist, otologist, and neurologist.

This cursory overview of the program and the staff will be followed by a more complete description in parts of the Methodology section which will follow.

(b) Population and Sample

Samples were drawn from the deaf populations in the midwestern states and from California. The samples varied with different aspects of the research.

The primary population for inpatient and outpatient diagnosis and therapy was deaf people in Chicago and adjoining areas including those in state hospitals. However, services were not denied any one due to geographic location, and some patients came from as far away as Texas, Wisconsin, Kentucky, Michigan and Indiana. From a research and demonstration framework the rationale for nonrestrictive patient selection was in part to see what kind of patient population could be expected if mental health services for deaf persons were made available in a downtown location of a large metropolitan center. The only screening criteria were that they have a suspected severe hearing loss, or be children of deaf parents, and that there be some evidence of psychological disturbance. Two asphasic patients previously misdiagnosed as deaf were also seen.

Thus, we feel the sample seen was, within very broad limits, representative of the type of clientele clinics with inpatient and outpatient facilities could be expected to see during their initial years of operation.

A part of the research involved the population of the California School For The Deaf, Riverside. Close working relations and the full cooperation of this school, plus the project director's five years of previous employment there, made possible very effective research involving all deaf youths who had applied or entered the School since its opening in 1953. These 1,600 cases were reasonably representative of the deaf school age population in general and certainly representative of residential students. Deaf pupils in Chicago and suburban schools and from the residential schools of Indiana and Illinois were sources of other samples.

The prototypic preventive program of the Henner Hearing and Speech Center in cooperation with Dr. Mindel drew its sample from the population of Henner which is a large hospital-located audiologic clinic. Preschool deaf children and their parents, a total of 154 people, were offered the service at a nominal cost, pro-rated on ability to pay. Because of the new and controversial nature of the program the sample it served may have been somewhat non-representative.

Another aspect of the preventive program – the community communication and guidance service – provided assistance to over 250 deaf persons and their family members. These classes were open to any person who wanted to attend, and there was no charge. In general this sample represented parents of deaf adolescents and young adults who had found oral education inadequate to enable them to communicate with their children and who were willing to do something about it.

What follows is a detailed description of inpatient and outpatient population in terms of certain key variables.

Patient Population

One hundred and fifty persons were seen in the hospital and outpatient clinic. Of these, 38 were hospitalized and 121 were seen as outpatients.

Hearing Loss, Etiology, and Onset: Table 1 summarizes the basic audiological data on the 38 inpatients. With one exception, all of these patients were deaf in the sense that they could not understand speech, with or without a hearing aid. In one case the onset of deafness was post-lingual.

Etiological factors revealed no surprises in terms of expected prevalences. It is obvious that some of the major known causes, such as meningitis, rubella, Rh factor complications and even genetics, are known to also cause brain damage. Of interest is that medical advances have virtually eliminated scarlet fever as an etiology and complications of Rh factor and rubella will soon yield to vaccines and hematological procedures.

The outpatient audiological picture is somewhat different (Table 2). On these patients it was not possible to obtain hearing tests. However, the psychologist on outpatient service had had extensive training in audiology and 15 years of experience with speech and hearing problems. He was able, therefore, to categorize, in interviews, (1) those who could not hear speech well enough to understand in a one-to-one clinic setting (the deaf); (2) those who had losses which under the same clinic condition made understanding speech difficult but possible (the hard of hearing); and (3)those with normal hearing or with some communication problem such as aphasia.

Of the 121 outpatients, 97 were deaf, 20 hard of hearing, two had normal hearing (children of deaf parents), and two were aphasic with normal pure tone thresholds. Only 13 hearing losses were of postlingual onset (after three years of age). Seven of these were cases of progressive development of the hard of hearing condition. Etiological data on many outpatients was too dubious for reliability, necessitating a designation of "unknown."

Intelligence: Wechsler Performance Scale IQ's were obtained on outpatients and inpatients whose mental state during their hospitalization or clinic visits permitted testing (Table 3). These data, as have previous studies (Vernon, 1969), indicate intelligence to be essentially normally distributed in the deaf population. The exception in our patient sample was the number of mentally defective cases. This resulted primarily from various agencies in the city bringing such cases to the clinic for certification of retardation for welfare and social security purposes.

Age, Marital Status, Sex, and Ethnicity: These data are presented in Table 4. In terms of age it is worth noting that over one-third of referrals were students, a fact which will be elaborated on in a subsequent section but which suggests a large number of academic problems.

The percentage of females 18 or over and males 21 and over who are unmarried is obviously quite high, even though normative data are not available. This, for the most part, reflects the tremendously isolating quality of deafness which is caused, in part, by the present educational treatment of the problem.

The overall greater number of males than females is in part a function of the etiologies of deafness which affect males more often than females (Vernon, 1968). Thus, in the general deaf population there also are more males.

The information on ethnicity reflects a considerably smaller proportion of Negroes than would be expected, considering the location of the hospital is in Chicago's south side ghetto area. This lack of Negroes could be due to a number of factors. We feel it resulted primarily from two causes. One, there was no Negro member of the Project's professional staff, which probably minimized project rapport with the Negro deaf. Second, the Negro deaf in Chicago, as elsewhere (Schein, 1969), are less organized and more difficult to communicate with through established channels. Corollary to this there is relatively little integration of whites and blacks in adult deaf society.

Other Samples Studied: In addition to the inpatient and outpatient sample just described, over 2,000 other subjects were involved in various aspects of the service and in many of the research studies conducted. In the interest of readability and better organization these samples will be described in the sections where the research in which they were involved is reported.

Dependent and Independent Variables Being Studied and Hypothesis Tested. Data Collection & Analysis

The grant was awarded with the understanding that the first year was to be devoted to development of hypotheses. Thus, the hypotheses and experimental design and the results are intertwined and will be reported together as *Results.*

Results and Discussion

The initial part of the results section will describe the way in which the experience gained from the Planning Grant and the first year determined the work which was to follow. Major aspects of this work will then be presented as separate chapters.

Family Dynamics

The most striking and immediately apparent clinical observation derived from treating deaf patients was the lack on the part of the families of the patients of adequate techniques for coping with a deaf child or adult. The magnitude and degree of maladaptive reaction to the deaf family members was actually more than a lack. It was an oversufficiency of inappropriate pathological coping procedures.

In essence, the deafness was denied, as were the family, feelings of sorrow, grief and anger about it. Growing out of this denial were unrealistic, incongruous, and unattainable goals which were assiduously strived for. The resulting frustration turned to an underlying rage and anger which pervaded the family relationships. Coupled with a denial of the basic implications of the deafness, the problem becomes chronic, and the rage and depression were observed in our studies as a lifelong family pathology.

This general set of dynamics was the major etiology underlying the mental illness and less severe nonadjustive behavior in the patient population. Thus, very early in our work a plan for the prevention and further study of pathological coping in families of deaf children was instituted, developing from this was a prototypic program for the healthy psychological development of deaf children and their families. This aspect of the work is reported by its director, Dr. Mindel, in Section 13.

Communication and Education

A major manifestation of the pathological family denial of deafness is in the area of communication. As Table 5 indicates only 25 percent of the patients could make themselves understood in oral, i.e., spoken communication. Table 2 shows that three-fourths of this 25 percent were hard of hearing, not deaf, or else they were deafened late in life. Thus, only a few of the prelingually deafened could communicate adequately through oral means.

What makes this pathological in the psychiatric sense is that out of the total patient population only three cases, when seen in the clinic prior to therapy, had one or more family members able to communicate adequately manually. Hence, communication between the deaf patient and his family was essentially nonverbal and hence, far too minimal for normal interaction.

These patients were, in fact, isolates in their own families. The stress and deprivation resulting from this was a leading pathogenic factor in the etiology of the mental disabilities noted in the patient population.

A further examination of Table 5 shows one-fourth of the deaf patients seen had no adequate means of communication at all. They could not speak intelligibly. They did not know sign language. They had severely limited capacity to express themselves in writing and were unable to read more than simple nouns and rudimentary phrases.

Many of these were bright adolescents or young adults for whom learning speech and speech reading had proven unsatisfactory, yet who had been forbidden by the schools to learn manual communication. They were not only unnaturally isolated and frustrated as a consequence, but they were also grossly undereducated. Some of these young people could be expected in future years to enter the adult deaf community and learn sign language. Many of the others, and the older persons, will probably go through life as nonverbal creatures with latent human qualities suppressed by an unnecessary isolation superimposed upon them by an insensitive "habilitation and education" program.

One-third of the patients were capable of manual communication and another 14 percent could be understood by a combination of manual and oral means.

Communication, especially between parent and child, is essential for normal psychological development and effective education. Its absence in the majority of our patients and their families was not only a significant contributing factor to their mental illness, but was also a major block to psychotherapy.

Remedially this was treated by providing classes in manual communication for inpatients and outpatients. With the former, not only were the classes open to deaf inpatients, but to the nondeaf patients and to the hospital staff. Several hundred persons were served in addition to the 38 who were deaf. This provided deaf patients with a means of communication making psychotherapy possible. It also created a hospital milieu in which nondeaf patients and staff communicated with the deaf, a most important therapeutic gain.

To remedy the communication lack with outpatients, and to enter the community at a preventive level, communication and guidance classes were established in the city and suburbs. Hence, deaf outpatients who were unable to communicate adequately were provided lessons in sign language. Of equal importance was the participation of their families.

In the "psychologically safe" environment of these classes many families and deaf youth not only learned to communicate, but they also worked through some of their feelings about deafness by talking with other families having similar difficulties. As communication skills developed, the frustration in the homes tended to diminish, and conflicts were resolved verbally instead of being aggravated by the frustration of not being able to communicate.

In addition to outpatients and their families, many other families with deaf members participated in these classes, as did some professionals working in the area of deafness.

For example, a number of teachers and rehabilitation counselors attended the classes. They recognized the need for manual communication if in their professional capacities they were to serve deaf people.

This community mental health approach to prevention was coupled with extensive writing (see bibliography) and speaking to professional and parent groups and with other related community involvements by project staff.

These efforts and Mindel and Stein's Henner program had a powerful impact for prevention. Three Chicago suburban school districts are introducing varying combinations of the guidance sessions and sign language classes for parents and students and/or combined system preschool or elementary school programs exemplified by the Henner Hearing and Speech Center at Michael Reese.

For these kinds of embryonic changes to have occurred in the Chicago area, long known for lagging behind educational programs for the deaf in this country, is a major step in the prevention of mental illness. It provides hope that instead of producing nonverbal isolates, grossly under educated and subject to psychopathologies associated with this deprivation, the Chicago area may produce educated, verbal, deaf graduates.

Thinking and Language

Clinical study of thought processes in deaf patients and previous research by Furth (1964) and Rosenstein (1961) led to the hypothesis that the mediating process of thought is not verbal symbols. The initial Project investigation of this was reported by Vernon (1967). From a review and analysis of 33 independently studied problem-solving experiments, comparing over 8,000 deaf and hearing children, it was concluded that the thought process occurs independently of verbal language because groups of nonverbal deaf children do as well in problem solving as do matched hearing children who have a verbal symbol system.

In a further test of the role of verbal language in thought process, an experiment was conducted to determine not only whether or not verbal (normally hearing) – and nonverbal (deaf) subjects solved problems with equal efficiency, but if they used the same strategies. A doctoral dissertation testing this hypothesis was done by Ken Vande Woude under the direction of Dr. Rimoldi and Dr. Grinker. Results indicated that strategies in problem solving are independent of the presence or absence of a verbal language. It was suggested that the problem solving tasks used in this study require the subject to make a series of "contingent" statements about the problem if he is to efficiently reach a solution. If this is the case, then the technique employed in this study may provide a method for teaching logic to the deaf as suggested by Furth (1966). Also, the problem solving technique may be a step toward filling the desperate need for methods of teaching the deaf to think in terms of "if-then" relationships.

Recent work by Koh, Bailey and Vernon which is reported separately in Section 15, is attempting to determine the role of language in various aspects of memory such as information storage and retrieval, in the subjective organization of information for making judgments, and in some of the psycho-physical determinants of internal scaling. Parts of this work also challenge the original findings of Furth (1964), Rosenstein (1961), Vernon (1967), and Vande Woude (1968).

Organic Pathology and Behavior in Deaf Persons

Early in the Planning Grant, research was begun on the relationship of causes of deafness to the behavior of deaf people. The reason for this research direction is that the leading etiologies of deafness are also major etiologies of brain damage and other neuro-physiological pathology. It was hypothesized that these etiologies could be expected to have behavioral manifestations including mental illness.

To test this hypothesis a school population of 1468 deaf youth was studied. The independent variables in the research were the five major causes of deafness: prenatal rubella, meningitis, heredity, premature birth, and complications of Rh factor. Psychological adjustment, intelligence quotient, educational achievement, psychodiagnostic and/or other behavioral evidence of brain damage, aphasoid disorders, cerebral palsy, or other physical anomalies were noted.

The findings of this research have been extensively reported in journal articles and most recently in a research monograph (see list of Project publications). For that reason the detailed findings will be omitted at this time and only a few of the conclusions of maximum generality will be given.

Theoretically, it is now apparent that behavior noted as characteristic of deaf persons cannot be explained primarily as a reaction to deafness as has been done in the past (Vernon & Rothstein, 1967). It is instead often an interaction effect of both the loss of hearing and of other central nervous system pathology associated with the condition causing the deafness. For example, a significant amount of the language disability found among deaf people is due, in part, to organically caused aphasoid disorders, not just deafness. The same is true of other types of learning disabilities.

The impulse disorders, psychoses, and other behavioral disorders found in the deaf population can also be accounted for in part by the central nervous system pathology present in many of these persons. For example, Rainer and Altshuler (1963 and 1966) report symptoms among some deaf mentally ill that are similar to the "Strauss Syndrome" found to characterize brain injured people.

From a practical viewpoint, an understanding of the kinds of disabilities and their prevalence provides a description of the educational, vocational, and mental health problem which is to be met.

Usher's Syndrome

Approximately five per cent of psychoses in the deaf population are due to Usher's Syndrome (Rainer and Altshuler, 1963). Therefore, an extensive study of this condition was undertaken and a prevention program developed. At the suggestion of Robert Finch, Secretary of the Department of Health, Education and Welfare, his department is reviewing the prevention plan for possible implementation by this agency. The work on Usher's Syndrome has been fully reported in an upcoming paper in the *Journal of Chronic Diseases* and is summarized below.

The usual description of Usher's syndrome as a congenital deafness and retinitis pigmentosa is incomplete. There is also central nervous system degeneration, manifesting itself variably in psychiatric illness, loss of olfactory sensitivity, aphasia, mental retardation, abnormal EEG readings and other neuropathology and behavioral correlates. While it is a rare disease in the general population (three cases per 100,000 population), it is significantly prevalent among those who are deaf. For example, approximately five to 10 percent of the genetically deaf are afflicted with this appalling handicap.

The disease is generally reported as being inherited autosomal recessively. Recent research indicates that heterozygote carriers of Usher's can be identified by complete auditory, visual, and vestibular diagnostic procedures. Usher's syndrome is more common in family pedigrees having cases of retinitis pigmentosa, which along with the variance of traits found in persons with Usher's, raises serious questions about its genetics and the possible embryological, toxic, and metabolic processes in its pathogenesis.

Commonly used techniques for diagnosing the disease (opthalmoscopic examination and visual field testing) fail to detect the condition until it is in a relatively advanced stage, and the patient is usually in his late teens. More thorough techniques involving electroretinography, electronoculography, and dark adaptation measure make it possible to make the diagnosis much earlier.

Although a wide variety of treatments have been tried including surgery, endocrine therapy, vitamins, and transplants, at present the disease cannot be cured nor can its course be significantly altered. This places a premium on prevention.

A program for prevention through high risk diagnostic screening coupled with genetic counseling is both feasible and practical. The already existent centralization of the high risk populations assures a yield from screening procedures of probably five to 10 percent which makes prevention a necessity in view of the appalling trauma and chronicity of the affliction. Following identification of cases of Usher's, relatives should then be examined to determine if they are carriers.

Research into biochemical, genetic, metabolic, psychiatric, and other behavioral aspects of Usher's offers hope not only for greater understanding of this disease, but also for findings of far greater generality. Usher's represents a centering of gross central nervous system pathology with major psychological correlates such as aphasia, memory pathology, psychosis, and mental retardation. An understanding of the pathogenesis of Usher's may give insight into these other conditions.

The data in the sample studied in the original research of this paper substantiates the existence of extensive neuropsychological symptomotology concurrent with the loss of hearing and sight. The findings also raise the questions of whether or not the deafness is congenital, suggesting that it, and the vestibular pathology, may be progressive, but well advanced by age two or three.

Considerable variation in hearing, vision as well as other abnormalities present in the sample further indicate that defining Usher's syndrome in terms of hearing and visual losses is a misleading oversimplification.

Illinois State Hospitals and Deaf Patients

One aspect of the research included surveying local mental hospitals in the state to locate deaf patients and to examine the hospital treatment programs for the deaf. Manteno, Chicago State, and Elgin, mental hospitals in the vicinity of Chicago, were surveyed completely on a unit by unit basis. The facility at Jacksonville was also surveyed, but somewhat less thoroughly.

A number of rather startling findings resulted. First, in only one of these four facilities did the staff have any concept of which patients were deaf. At Manteno, for example, we were given a list of 200 names of patients who were supposed to be deaf out of the approximate patient population of 4,000. Only one proved to be deaf. Furthermore five deaf patients, none of whose names were on the list, were found in just one unit. Many of the deaf thought they were the only patients in the hospital who were deaf.

Obviously if the deaf patients were not even identified as deaf, no real effort was made to treat them. No staff members or other patients could communicate with them in the language of signs. Thus, they were total isolates. In fact, in this sense their hospitalization was actually anti-therapeutic.

Furthermore the many community agencies such as the Division of Vocational Rehabilitation, Jewish Vocational Services, Illinois Association for the Deaf, religious groups, etc., which have professionals and others on their staff trained to work with deaf persons were rendered useless by the Department of Mental Health's failure to identify and group deaf patients.

From this kind of "treatment" approach it would logically follow that deaf patients as a group were chronic. This proved to be true. More importantly many of them were misdiagnosed as mentally retarded, paranoid, or as having chronic brain syndromes due to language patterns resulting not from their psychopathologies, but from deafness.

For example, we saw one man who had been institutionalized at age four as mentally retarded. After 30 years of hospitalization he escaped and worked in Chicago two years before they found him. Prior to returning him to the institution he was tested and proved to have an IQ of 84. After 30 years with institutionalized retardates this score is remarkable and suggested a rather gross earlier misdiagnosis and inappropriate commitment.

From our survey of the Department of Mental Health's care of deaf patients we could only concur with what was stated by the Report of the Illinois Commission on Children (1968):

"At present the State of Illinois is providing very little treatment for deaf mentally ill children and adults. Custodial care in state hospitals is given to those deaf persons society is unable to tolerate, but this care is more a protection and convenience for society than a treatment effort in the interest of the deaf patients. Furthermore, misdiagnoses by psychologists, and psychiatrists who confuse language disability, vocalizations, and educational lag due to deafness with mental retardation, schizophrenia, and autism have lead to the hospitalization of deaf individuals whose problems were increased rather than alleviated by this inappropriate placement."

Communication and Psychological Development

One of the hypothesis which grew out of our studies during the first two years was that the introduction of early manual communication would alleviate significant amounts of the psychosocial deprivation and pathological family interactions noted in deaf persons and their families. In addition to the prospective work of Dr. Mindel and the Henner Clinic along this line (Section 13), Vernon and Koh have conducted two retrospective researches testing the hypothesis.

The first was a matched pairs experiment which compares 32 deaf children with early manual communication with 32 who had early oral communication. They show that the use of early manual communication results in significantly better overall educational achievement, including superiority in reading skills and written language. Comparisons on the variables of speech intelligibility and speechreading indicate that there were no differences, despite the fact that the oral group for the most part had extensive preschool oral training, whereas the manual group had not. Also the parents of the manual group did not know the oral method, but used verbal speech.

In psychological adjustment no statistically significant differences were found.

The findings of this research and of previous investigations are in total agreement that early manual communication greatly facilitates educational achievement and linguistic development. The consensus of this investigation and previous studies is that speech and speechreading are not hurt by manual communication, and psychological adjustment is as good, or better, for those who had early manual language. These findings in support of the value of early manual communication were obtained despite the demonstrated superior educational level of the parents of the oral samples.

The second study compared 64 deaf children who had gone through the world famous Tracy Clinic oral preschool program with matched deaf children of deaf parents and with matched deaf children of hearing parents who had had no preschool. The Tracy program involves three years of intensive oral preschool instruction of the deaf child and equally intensive instruction and psychotherapy with the parents.

Results of this research are now being analyzed. Thus far they show that students having had the three year Tracy course do worse educationally than do children of deaf parents who had no preschool at all. Furthermore, speech and lipreading skills are no better nor is psychological adjustment, despite the psychological counseling, emphasizing "oralism," of Tracy parents which was not available to the deaf parents. Comparisons between the Tracy students and the deaf students of hearing parents who had not attended preschool showed no differences.

The conclusions to which these data lead are that a restriction to early oral communication has negative effects on the development of the child even when given under intense, long, and optimal conditions. Early manual communication facilitates development even when provided by deaf parents of limited socio-economic and educational background and not supplemented by preschool instruction of any kind.

Deafness and Minority Group Dynamics

A didactic sociological treatment of deafness was conducted which applied available knowledge about the relationship of minority group dynamics to the majority society in order to analyze the position of deaf people in Western civilization, especially the United States.

Conclusions were that the paternalism which denies deaf persons important roles in habilitation, education, and rehabilitation programs which are ostensibly designed to help them has parallels in similar roles delegated to minorities, such as Indians, Negroes, and Mexican Americans. This is exemplified by the Office of Education whose programs in deafness have most of the negative characteristics which have typified the Bureau of Indian Affairs' destructive handling of Indians. Deaf persons chances for effective functioning as a minority will be increased by patterning their dynamics on those of successful minorities such as Jews, Mormons, and American born Orientals.

Outpatient Clinic

This section will be primarily a report of the outpatient clinic, although certain data on inpatients will be included because initially they were all seen in the clinic. For reports on inpatient and outpatient treatment techniques and other related data refer to Sections 8, 9, 10, 11, 12.

Table 6 presents a summary of the diagnostic categories into which the patients fell. Those familiar with the problems of classifying human beings into psychiatric nosology, especially when they are deaf, will recognize the subjective nature of these data and their consequent limitations as a tool in understanding the deaf population seen. Hence, rather than discuss patient nosology at length, common behavioral factors observed will be reported with considerable reference to *Table 6*.

Common Behavioral Factors

Isolation – As indicated earlier the stark isolation from other human beings noted in these patients was far greater than that seen in any other group of mentally ill persons ever observed by the project staff. Many of these people not only were unable to exchange rudimentary information with their families, but they had no other close human contacts, deaf or hearing. Having been reared with the goal of communicating orally, or not at all, and as a rule failing to be able to communicate orally, many of them were reinforced with excessive frustration in their efforts at human interaction.

The healthier of these patients slowly responded to therapy in conjuction with instructions in manual communication. However, a sizeable number of them with an almost neurotic repetition compulsion persisted in isolating themselves. After years without real human contact or embittered by early traumatic rejections these patients were terrified by closeness to others, and could not form healthy object relations. This lack of basic trust when present made therapy difficult.

Denial – The extent to which deafness and its implications were denied by the families of the deaf patients was eye-opening even to sophisticated psychiatrists long experienced with hospital patients and their families. Part of this is an outgrowth of the invisibility of deafness and part is the extent to which professionals in education, audiology, medicine and related fields encourage the denial with therapy which actually is an effort to deny. Both Rothstein and Mindel discuss denial in Sections 11 and 12. In these sections the underlying dynamics, the need for working through a mourning of the grief caused by deafness, and examples from case material are given.

It will suffice here to indicate that denial of irreversible deafness is a pathological, yet common, method of coping with the trauma. It prevents the development of healthy constructive reactions to deafness and leaves the deaf person and his family directing energies toward activities that are inappropriate to the reality of the situation. Frustration and failure result.

Underachievement – One of the most disturbing findings of the Project was the pervasive underachievement of the clinic population. This was particularly true of the 17 per cent who were diagnosed "School Situation Reaction" for want of a better term. These were normal deaf youths who voluntarily came to the outpatient clinic with their parents for educational consultation. Many were teenagers with high IQ's whose educational level was second or third grade. In fact, the mean educational achievement of the clinic population was fourth grade. From this, plus the lack of general knowledge imposed by the communication limitations of deafness, a gross general naivete resulted.

The failure of the educational system undermines efforts at psychotherapy and habilitation. A grossly weak educational foundation mitigates against a hopeful prognosis. The demands of today's technological society preclude vocational success for one saddled by the combined handicaps of deafness and undereducation. Even for the ambitious deaf student, self education is impossible if reading levels are third and fourth grade.

A recognition of this gross educational underachievement made it apparent that any effort at improving mental health conditions would have to deal with this core problem. Therefore, in addition to the Henner prototypic program the project staff made over 40 speeches to parents and professional groups involved in education, six papers were published on this problem (see project publications), and every possible effort was made to improve the existing situations. Mindel in Section 12 describes in part the tremendous resistance of the educational establishment to these efforts and to needed change.

The educational underachievement was naturally associated with under employment. No patient seen, was or had been, employed in a professional capacity. Of the eight who had attended college, two* had graduated – one was a postman, the other a draftsman doing essentially skilled, not professional work. Of those who did not graduate, several were still in college, one was a draftsman, and two were housewives.

Overall, of those 18 and older, only seven percent worked or had worked as skilled laborers or technicians. Thirty percent had never held a steady job. The remaining 53 percent were working, or at one time had worked, in unskilled or semi-skilled jobs.

A rather unfortunate paradox was noted. Among the few who achieved reasonably satisfactory academic achievement levels, and among the many with potential but relatively low educational levels, there was little knowledge of available rehabilitation programs established to give deaf people college, technical and vocational training. Thus, while many of these facilities have vacancies there are a large number of people needing the services who are unaware of their availability.

Arrested Versus Regressed Personalities – One fundamental of therapy is that it is far easier to successfully treat a patient who has regressed from a higher level of personality development than to help a person who, due to arrest or deprivation, has never advanced beyond a relatively primitive state. Due to a lack of adequate parent-child communication, deficient interaction with peers, and undereducation, many of the deaf patients required a therapy geared not just to returning them to previous levels of functioning, but bringing them beyond this to higher levels of integration.

Paranoid Behavior – Folklore has frequently described deaf people as suspicious or paranoid. Earlier research by Rainer and Altshuler (1963) reported this is not more common in the deaf.

We found that of the 43 patients diagnosed as schizophrenic, 25 were paranoid type. Eight others had significant paranoid components in their behavior. Of the 13 non schizophrenic psychotic disorders, six were some form of paranoid diagnosis. The paranoid delusions were generally those of a religious, racial, or fascist nature which characterize many paranoid disorders. Some patients reported their genitals manipulated by God, one man repeatedly attacked Negroes on the street feeling they were against him, and a youth of 19 drew swastikas and "read" *Mein Kampf* by the hour, despite a third grade reading level. In four cases overt homosexual behavior was also present.

These data and the amount of "suspiciousness" noted among those with nonpsychotic disorders leads us to tentatively conclude that paranoid behavior or suspiciousness is probably somewhat more common among the deaf mentally ill than corresponding hearing populations. This seems especially true of the hard of hearing and the adventitiously deafened.

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*One patient deafened and blinded at age 34 by surgery had previously graduated from college and had been a teacher.

Several reasons exist for paranoid behavior among the deaf. First, the reality is that deaf people frequently are taken advantage of by hearing persons. Also it is not at all uncommon for nondeaf people to make strongly negative comments about deaf persons in their presence some of which is communicated to the deaf affectively or through lipreading or partially hearing the statements.

A second related reason is that because of the communication difficulties imposed by deafness much is done to deaf people for which no adequate explanation is given.

For example, one paranoid youth we treated had been told a few months earlier that he was going to town. Instead he was taken to a hospital and with no further explanation prepared for surgery and awoke the following day after having had a double hernia repaired. As this surgery arouses sufficient castration anxiety under optimal conditions, it is easy to understand the frightening fantasies this youth had. Incidently the operation precipitated a psychotic episode.

In less dramatic cases deaf people get involved in contracts for cars, homes, etc., in which they are told little or nothing about the nature of the agreements. When their parents die rarely are they given the details or informed about the will. Often they are exploited.

A third explanation for the paranoid behavior observed is the tendency of deaf people to use projection as a defense mechanism. Paranoid reactions are, of course, characterized by projection.

Another contributing factor is the extent to which deafness limits the person's perceptions of what is going on about him. The environment consequently becomes more ambiguous. The typical reaction of anyone to ambiguous social situations is a project. In fact, this is the rationale behind tests such as the Rorschach and T.A.T.

A final circumstance accounting for what appears to be more paranoid behavior among the deaf is the apparent greater degree of sexual maladaptation and misinformation present. Typically homosexuality is believed to underlie much paranoid thinking. Interestingly, this and the tendency to use projection as a defense, were noted by Rainer and Altshuler (1963), yet they also reported the deaf to be no more paranoid than the nondeaf.

Inadequate Personalities – Over seven percent of the patients bore the diagnosis "inadequate personality" and many others could have been so classified had not other pathology been more dominant. A number of these patients were deaf Negro youths who grew up in the South and never had attended school. When their families moved to Chicago these young people faced adjustments far different than those that had been successful in the rural South. With no verbal language at all, no means of communication, no education, and no experience with inner city life, they were quickly exploited by gangs and others. Eventually, in frustration, they would attack their tormentors with a deadly weapon and be referred to the clinic from courts.

One case was a boy born and raised in Chicago who was classified as demonstrating an antisocial reaction, although he was also obviously an inadequate personality. As a five year old, he had been taken to school for a few months, but did not like it. Consequently, his mother kept him home for the next 10 years.

During this period he and his mother had few other outside contacts. They remained in the home most of the time except for periodic visits to the park and the grocery store. Finally, three months before this boy became 16, the Chicago school authorities discovered him to be truant.

After nearly 16 years of almost total protection he was now dumped into the Audy Home, a facility where delinquent and/or homeless children are kept. After three months there he became 16 and school attendance was no longer compulsory. He was returned to his mother. Still totally illiterate and nonverbal but with three months of experience in a jungle of violence, crime, and sexual abuse, he became incorrigible. He would physically terrorize his mother, coercing money and food from her. He would then be out all night often to return in police custody or bloody from fighting. Now 17 he is bounced between state hospitals, jail, and home.

There was another type of inadequate personality seen fairly frequently in the clinic. Sometimes these patients were classified as passive dependent, or as a situational reaction. These were the patients who had always lived at home with their parents. In this protective setting they were able to function. As the parents grew feeble, or died, the deaf patients were left unable to function independently and unwanted by relatives. Hospitalization in state facilities, or in some cases, incarceration, were the most common outcomes regardless of whether or not the parental loss had precipitated a psychosis.

Two patients classified as inadequate personalities, one of whom was mentioned earlier in the report, deserve mention because of their strange histories and because their general circumstance has been observed in other settings by project staff.

Both are cases of patients hospitalized when young children as retarded, but who, as adults have been found not to be retarded. The patterns of behavior learned from years as institutionalized mental deficients render them unable to adequately cope with urban living without rehabilitation. For example, both are openly promiscuous and bisexual, behavior common in their institutional environment but cause for legal prosecution outside.

These two men epitomize the basic problem of misdiagnosis that occurs too frequently with deaf patients. The author has personally discovered a number of such cases in hospitals for the retarded, one of whom later went on to college.

Autism – Autism is an extremely rare condition yet six cases were seen in the outpatient population of 121. Based on this fact and previous clinical experience of the project staff, it appears that autism is somewhat more prevalent in the deaf population, perhaps as part of a genetic syndrome and/or as a consequence of the deprivation of early profound hearing loss. With two of these children, the parents and siblings gave evidence of excellent psychological adjustment and could in no way be seen as "autisogenic" families.

Sexual Deviation – In addition to the 4.4 percent of patients whose primary symptom was sexual deviation, there were a number of others in whom sexual adjustment presented major problems. Homosexuality was the most common pathology but there were also cases of promiscuity, exhibitionism and pedophilia.

A lack of sexual information, also noted by Rainer and Altshuler (1963), was common and perhaps a more persuasive problem than specific sexual deviations.

Organic Factors – Apart from some of the clear cut organic syndromes such as the reaction to pellegra, organic factors appeared to form a component in several of the schizophrenic cases, the retardates, and, as mentioned earlier, in the autistic children. Several cases with aphasoid involvements appeared to be postencephalitic. One girl reported by Stein and Curry (1968) was especially fascinating. She had been educated as a deaf child from beginning school age, based on diagnoses from two of the leading audiological centers in the United States. Yet she had normal responses to pure tones, no speech or speech reading despite extensive instruction, but she could use sign language fluently.

Depression – There is considerable conflict about the relationship of deafness and depression. Earlier work by Altshuler (1967) suggested endogenous depression to be less prevalent among the deaf, due in part to their tendency to externalize responsibility by the mechanism of projection.

Slightly over six percent of our population had a primary diagnosis of depression. Depressive affect was a component in many other cases. Three of 38 inpatients had a history of at least one serious suicide attempt. Of 121 outpatients four had made attempts. The number who discussed suicide as a way out of their difficulties approximates twice the number who actually tried it.

Relative to the aforementioned high prevalence of denial of deafness, it appeared that this denial was often a mask or defense against depression. Treatment required a working through of this denial, a "mourning" of the loss of hearing, followed by a realistic acceptance of the deafness.

It is our conclusion that the frustration and isolation of deafness combine to produce considerable depression in deaf persons, especially those who have intellect and ambition which is thwarted by the limitations of deafness and by inappropriate educational and habilitative techniques. Deafness, with its isolating quality, forces an internalization of interests and preoccupations, often correlated with depression. The anger resulting from the frustration compounds the difficulty.

The feelings of insecurity and low self esteem which result in the defensive projecting and externalizing of blame and cause for personal difficulties may be coped with to some extent by this sort of a defensive strategy. For some deaf persons, especially the immature, depression may therefore be warded off. However, the underlying problem remains. As with the defense of denial of deafness, a healthy resolution of the problem comes only from a working through of the "mourning" of the hearing loss, and a resulting reality based on coping with it and its implications.

Follow-up

The follow-up data on inpatients is presented in *Table 7.* The number of patients and the brief period from the time they were discharged until the time of this report (range of 32 months to one month), limits the conclusions which can be drawn. In interpreting the information it is helpful to know that 23 of the patients had had previous psychiatric hospitalizations. Five of these were patients with histories of 10 or more years in state hospitals.

Our experience suggests that with therapy, and other rehabilitation, up to half the deaf patients in state hospitals can be discharged able to function in varying levels from independent employment to sheltered workshop settings. This is exclusive of those whose primary problems are geriatric. Some changes occurred in the chronic schizophrenic patients, but there were no cures.

Along with therapy, the existence of residential rehabilitation centers like the one in Hot Springs are major adjuncts to rehabilitating the hospitalized patient. Once therapy prepares the patients for further movement, often they are then in a condition where they no longer need hospitalization, but they are not prepared vocationally or psychologically for full independent community living. The opportunity to establish vocational skills and make social adjustments from hospitalization in a structured environment transitional to return to the community is tremendously valuable. Without this, psychotherapy is often wasted and patients remain hospitalized for want of appropriate opportunities.

It is difficult to report follow-up on outpatient diagnosis and therapy. Certain points should be made, however. First, the clinic served an unexpected but extremely important function. By thoroughly evaluating students, the unemployed, and court cases, it was possible to direct these persons into the vocational and educational programs specifically geared to the needs of the deaf. For example, several youths were helped to enter Gallaudet College and the National Technical Institute for the Deaf. These are patients who would otherwise never have known about either school, yet who could not have gone to colleges for the hearing due to communication difficulties. Thirty-six other outpatients were directed into vocational, academic, or workshop settings which greatly improved their productivity as citizens and their life satisfactions as human beings.

TABLE 1

AUDIOLOGICAL FINDINGS: INPATIENTS

CASES	ETIOLOGY	ONSET	AVERAGE LOSS ISO 1964 BETTER EAR (500-2000 hz)
1 (H.B.)	Meningitis	About 2 yrs	85-Hearing at 20db at 125-250 hz.
2 (R.C.)	Rubella	Cong.	112
3 (A.D.)	Heredity	Cong.	83-Loss may have been progressive
4 (J.D.)	Scarlet fever	Age 4 yrs.	120
5 (J.E.)	Unknown	By age 2 yrs.	90
6 (H.G.)	Unknown	Cong.	108
7 (P.H.)	Measles encephalitis?	Age 2 yrs.	Some usable hearing. Nothing above 65 db in speech range
8 (M.I.)	Possible rubella	Cong.	120
9 (C.J.)	Possible rubella & prematurity	Cong.	112
10 (C.J.)	Unknown	Cong.	114
11 (R.K.)	Comp. Rh Factor	Cong.	88
12 (V.K.)	Unknown	Cong.	97
13 (N.K.)	Heredity (Consanguinity)	Cong.	78
14 (S.K.)	Possible heredity	Cong.	120-(no response)
15 (G.M.)	Unknown	Cong.	113
16 (J.M.)		Cong.	93
17 (J.M.)	Unknown	Cong.	115
18 (P.M.)	Meningitis	6 mos.	115
19 (E.M.)	Genetic	Cong.	Some usable hearing. Nothing above 65 db in speech range.
20 (W.M.)	Heredity	Cong.	Some usable hearing. Nothing above 65 db in speech range.
21 (E.N.)	Rubella	Cong.	87
22 (E.R.)	Scarlet fever	3 Yrs.	120
23 (G.S.)	Prematurity	Cong.	Some usable hearing. Nothing above 65 db in speech range.
24 (H.S.)	Unknown	Cong.	102
25 (T.S.)	Unknown	Bef. 1 yr.	No hearing for speech sounds
26 (V.T.)	Unknown	Cong.	Loss in 40-60 db range–Hard of hearing.
27 (J.T.)	Meningitis	9 mos.	90
28 (D.W.)	Scarlet fever	2½ yrs.	108
29 (W.W.)	Unknown	Bef. 3 yrs.	120
30 (A.W.)	Unknown	Cong.	100
31 (C.A.)	Unknown	Cong.	95
32 (E.H.)	Unknown	Cong.	106
33 (B.R.)	Unknown	Cong.	80
34 (A.T.)	Unknown	Cong.	108
35 (D.P.)	Unknown	Bef. 1 yr.	Some usable hearing. Nothing above 65 db in speech range.
36 (J.L.)	Genetic	Cong.	115
37 (S.K.)	Rubella	Cong.	No usable hearing for speech sounds
38 (N.W.)	Unknown	Cong.	105

TABLE 2

AUDIOLOGICAL FINDINGS: OUTPATIENTS

ETIOLOGICAL CATEGORY	NO. CASES	ONSET		ESTIMATE OF HEARING		
		Range	No. Postlingual	% Deafness	% Hard Hearing	% Normal Hearing (Aphasic)
Measles	1	12 mos.	–	–	100.0	–
Prematurity	3	Cong.	–	100.0	–	–
Meningitis	13	15 yrs. 1 mo.	4	84.6	16.4	–
Head injury	2	5 yr. birth	1	50.0	50.0	–
Rh Factor	9	Cong.	–	66.7	22.2	11.1
Genetic	9	Cong. to Progressive	–	92.9	11.1	–
Traumatic, unknown	1	12 yrs.	1	100.0	–	–
Rubella	2	Cong.	–	50.0	50.0	–
Unknown	73	Cong. 13 yrs.	6	85.1	13.6	1.3
No hearing loss (deaf children of deaf parents)	2	–	–	–	–	–
Encephalitis	1	3½ yrs.	1			100.0
Scarlet fever	2	3 yrs. 2 yrs.	–	50.0	50.0	–
Tumor of brain	1	32 yrs.	1	100.0	–	–
Syphillis	2	Cong.	–	50.0	50.0	–

TABLE 3

IQ DISTRIBUTION

PATIENTS	IQ CATEGORIES													
	Mental Defective (IQ 69–)		Borderline (IQ 70–79)		Dull Normal (IQ 80–89)		Average (IQ 90–109)		Bright Normal (IQ 110–119)		Superior (IQ 120–129)		Very Superior (IQ 130+)	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Inpatients (N = 32)	–	–	1	3.1	7	21.9	20	62.5	3	9.4	–	–	1	3.1
Outpatients (N = 103)	9	8.7	7	6.8	16	15.5	41	39.8	15	14.6	11	10.7	4	3.9
Total (N= 135)	9	6.7	8	5.9	23	17.0	61	45.2	18	13.3	11	8.1	5	3.7
Wechsler Test Norms	–	2.2	–	6.7	–	16.1	–	50.0	–	16.1	–	6.7	–	2.2

TABLE 4

AGE, MARITAL STATUS, SEX, AND ETHNICITY

	AGE					MARITAL STATUS				SEX		ETHNICITY			
TYPE PATIENT	% 0–15	% 16–19	% 20–29	% 30–39	% 40+	% Single	% Married	% Divorced	GIRL BELOW 18 BOY BELOW 21	M	F	Caucasian	Negro	Jew	Other
Outpatient (N = 121)	29.7	19.9	18.2	14.9	17.4	67.1	24.3	8.6	42.1	62.0	38.0	71.1	12.4	9.9	6.6
Inpatient (N = 38)	–	10.5	47.4	26.3	15.8	73.5	20.6	5.9	10.5	50.0	50.0	73.7	13.2	13.2	–
Total (N = 159)	22.6	17.6	25.2	17.6	17.0	69.2	23.1	7.7	34.6	59.1	40.9	71.7	12.6	10.7	5.0

* Percentages were figured on the basis of the number of females 18 or over and males 21 or over.

TABLE 5

PATIENT COMMUNICATION SKILLS

PATIENTS		ORAL		MANUAL		BOTH		NONE		(Aphasia) NORMAL HEARING	
		No.	%	No.	%	No.	%	No.	%	No.	%
Outpatients	(N = 121)	35	29.0	35	29.0	12	9.9	37	30.6	2	1.7
Inpatients	(N = 38)	5	13.2	18	47.4	10	263.0	5	13.2		
Totals	(N = 159)	40	25.2	53	33.3	22	13.8	42	26.4	2	1.3

TABLE 6

DIAGNOSTIC TABLE: DEAF PATIENTS

NOSOLOGY	OUTPATIENTS	INPATIENTS	TOTAL	PERCENT
Acute Brain Syndrome				
Post surgical brain trauma	1		1	0.6
Pellegra syndrome with alcoholism		1	1	0.6
Total	*1*	*1*	*2*	*1.2*
Chronic Brain Syndrome				
With behavioral reaction +	3		3	1.9
With aphasia	3		3	1.9
Total	*6*		*6*	*3.8*
Nonpsychotic (OBS)				
Alcoholism & passive aggressive character	1		1	0.6
Usher's syndrome	1		1	0.6
Total	*2*		*2*	*1.3*
Psychotic Disorders				
Schizophrenia	17	26	43	27.0
Paranoid Reaction	3	1	4	2.5
Autism (childhood)	6		6	3.8
Paranoid State, Chronic Compensated	2		2	1.3
Psychotic Depressive Reaction		1	1	0.6
Total	*28*	*28*	*56*	*35.2*
Psychoneurotic Reactions				
Depressive Reactions	6	3	9	5.7
Hypochondrial with Depression		1	1	0.6
Hysterical	1		1	0.6
Phobic with dependency		1	1	0.6
Total	*7*	*5*	*12*	*7.6*
Personality Disorders				
Inadequate Personality	9	3	12	7.5
Sexual Deviation	7		7	4.4
Antisocial Reaction	9		9	5.7
Passive Aggressive (with depression)	2		2	1.3
Paranoid	1		1	0.6
Passive Dependent Personality	3		3	1.9
Borderline	2		2	1.3
Total	*33*	*3*	*36*	*22.6*
Transient Situational Personality Disturbance				
Acute Reaction to Sudden Deafness	1		1	0.6
School Situational Reaction	27		27	17.0
Adjustment Reaction of Childhood	4		4	2.5
Adjustment Reaction of Adolescence		1	1	0.6
Adjustment Reaction of Adult life	2		2	1.3
Adjustment Reaction of Late life	1		1	0.6
Total	*35*	*1*	*36*	*22.6*
Mental Deficiency				
Mild	7		7	4.4
Moderate	1		1	0.6
Total	*8*		*8*	*5.0*
Normal Adjustment	1		1	0.6
GRAND TOTAL	*121*	*38*	*159*	*100.0*

TABLE 7

FOLLOW-UP OF 38 INPATIENTS

Returned to the Community		
1.	Working and self sufficient	12
2.	In school or vocational training	2
3.	Living in home with family	5
4.	Working in sheltered shop	3
	Total	*22*
Rehospitalized		
1.	Halfway house	1
2.	State Hospital (continosly)	6
3.	In and out of State Hospitals	8
	Total	*15*
Unknown		1
	GRAND TOTAL	*38*

8. Inpatient Psychotherapy

by Harry K. Easton Ph.D.

THE LITERATURE suggests that there has been a limited amount of research in the psychiatric treatment of deaf patients in a hospital setting. The only extensive report has been from the New York State Psychiatric Institute (Rainer 1963, 1966, 1967). Although the treatment of inpatients at the New York project was felt to be successful (discharge rate was roughly fifty per cent), a precise delineation of the treatment process was not elaborated. When the project for the study of the psychiatrically disturbed deaf began at Michael Reese Hospital's Psychosomatic and Psychiatric Institute, it was our intent to explore the feasibility of inpatient individual psychotherapy. It was further hoped that such treatment would not only result in the development of guidelines for therapy with deaf patients, but would also provide some understanding as to the influence deafness plays, if any, in severe psychiatric disturbances.

This section will present in a descriptive form the results of our experiences in providing inpatient psychotherapy to deaf patients. The discussion will include a brief description of the inpatient facility, the staff involved, the patients treated, their behavioral patterns, and the therapeutic techniques used.

A final section summarizes our findings and impressions and provides recommendations to those professionals who are, or will be, involved in a hospital treatment program for deaf mental patients.

I. Treatment Facilities

The Psychosomatic and Psychiatric Institute is an 80 bed teaching and treatment center where professional staff is trained in the therapeutic management of a psychiatric population. The institute is composed of five wards and various ancillary departments including an activities therapy section.

The five wards are characteristically populated by patients who, in general, vary in degree of pathology and overt behavioral difficulties. Thus, one ward is the most secluded and needs close supervision and management. It is composed of patients displaying severe acting-out behavior. Such patients are characterized by severe regression and suicidal patterns. The other wards vary in the freedom allowed the patients and the degree of supervision provided by the nursing staff.

The most open ward has a patient population which is the least disturbed and therefore more capable of independent functioning. It follows that this ward is also the least staffed since close management of patients is not required.

The usual procedure for admitting a patient is to place him, or her, on the ward most commensurate with the extent of his disturbance and the amount of supervision deemed necessary. When the patient progresses and improvement is noted, or if therapeutically desirable, the patient is transferred to a more open ward. In this way the hospital ward arrangement can serve as a therapeutic test of the patient's capacity to function more on his own and this capacity can be explored by the therapist in gradual and successive steps.

From the beginning of the Project for the Deaf, which included only five inpatients at a time, it was necessary to follow the procedures which were designated for the hearing patients. It would have been desirable to group the deaf patients together on one unit, but because of the ward structure of the hospital, this was not possible. They were grouped together only when it happened that behaviorial and management problems were similar. Thus, in most cases, the deaf patients who were admitted were usually placed on a more closed ward and then transferred to the other more open wards when therapeutically indicated. Hence, deaf patients were integrated with hearing patients. This approach, dictated by the hospital structure, will be more fully examined at the end of this paper. It suffices to say that despite the shortcomings of this approach, it worked reasonably well.

II. Staff

It was obvious that in using a facility and therapeutic environment designed strictly for hearing patients most of the staff would be unfamiliar with the deaf. Staff members such as nurses, activity therapists, resident psychiatrists, and interns are an important part of a treatment team. For the project to run effectively, their cooperation was needed. To do this the core staff of the project was directly involved in orienting the non-project staff. Sign language classes were offered, orientation provided, and the therapist for the deaf patients worked closely with the ward staff in providing assistance to the non-project members who were involved in the treatment of the deaf.

The project staff involved in the inpatient treatment consisted of two half-time consulting psychiatrists, two psychologists, a social worker, and a teacher-interpreter for the deaf. All of the staff had previous experience in working with deaf individuals, knew the sign language, and in general had considerable understanding of the deaf subculture. The roles of the staff as far as inpatient treatment were as follows:

A. *Psychologists' Role:* Of the two psychologists on the project staff one served as overall director and coordinator of the various aspects of the project. Although not directly involved in treatment, he provided diagnostic evaluations of the patients, interpreting when needed on the wards, and had some therapeutic contacts with patients when indicated. His role, outside of administrative duties, was partially to assist other staff members when additional staff contacts were needed and to serve as a consultant in the treatment process.

The other psychologist served primarily as the therapist for the inpatient deaf population. His role was to provide inpatient treatment, assist in ward management, and to provide ancillary services such as interpreting when needed. In addition to doing inpatient psychotherapy, he also provided outpatient treatment to patients who were discharged.

B. *Psychiatrists' Role:* The two half-time consulting psychiatrists participated directly in the treatment of deaf patients. One of the psychiatrists was involved in another aspect of the project's work and his emphasis was on families of deaf patients. The primary role of the other half-time consulting psychiatrist was to provide intensive supervision to the psychologist who was actually doing the treatment. In addition, he would often interview a patient briefly and he took responsibility for any required drug therapy.

C. *Social worker's role:* The social worker provided contacts with patients and family members of deaf patients. When indicated, she would also provide counseling and/or therapy with members of a patient's family. In all cases there was an attempt to integrate the therapy with the patient and the treatment provided for the family. The social worker was also responsible for group therapy with the deaf inpatients. In addition she provided adjunctive activities such as field trips and related experiences of therapeutic value to our patients.

D. *Teacher-Interpreter's Role:* Although the person was hired to function primarily as an interpreter, it was found that she could function effectively in other roles. Her primary role was interpreting for deaf patients during ward meetings and teaching the language of signs to the staff on the wards. This was felt to be vitally important. First, if nurses, aids and other ancillary personnel could communicate with the patients, the latter would feel less anxious and more responsive to treatment. Secondly, if the nursing staff was reasonably conversant in the manual language their own anxieties about having deaf patients would be lessened.

The teacher-interpreter became a very valuable member of the staff beyond the initially designated roles. She functioned as an auxiliary therapist and her interaction with the patients helped the patients' therapists to gain a more thorough knowledge of the person he was treating. In addition to regular contacts with the patient, the interpreter also served to teach basic skills in arithmetic, manual language, and other practical matters to those patients with gross educational deficiencies.

III. Characteristics of Inpatients Treated

During the initial stages of our project, many of our patients came from state hospital facilities. The majority of these patients had been hospitalized for many years so that they were institutionalized personalities. That is to say, they generally had limited motivation to change and for the most part, found the routines of the hospital comforting. We had the least success with these patients because their resignation to an institutional setting apparently was far less disagreeable than the threatening aspects of an attempt to return to society.

A. Referral Source

As the knowledge about the project became more available to the community, we began to receive other referrals for a very specific reason. These were mostly the result of complaints by family members regarding the patient's behavior around the home. In other words the reason for referral was behavior judged to be intolerable in the home or family environment. Of particular note is the fact that of 38 inpatients treated only two were self-referred. Why this was the case is not clear. One explanation is that deaf people in general are reluctant to enter a psychiatric hospital because the close-knit nature of the deaf community results in others in the community rapidly finding out what other deaf individuals are doing. Also, for a great majority of deaf individuals, their concept of a psychiatric facility is that of a place for "crazy people" and the deaf community is going to perceive anyone in a psychiatric facility as "crazy." This explanation is further validated by the high percentage of patients who openly verbalized this concern and the fact that they frequently resisted or had reservations in permitting non-patient deaf visitors.

B. Reason for Referral

The referrals from families and/or other relatives were from those who had put up with all the disruption they could manage and in essence wanted to be rid of problems with which they could not cope. In some cases the patient's behavior had been significantly disturbed for a long time, but nothing had been done, apparently because the patient was not disruptive in the home.

In one particular case, a deaf man with only manual language (which the family did not understand) sat home for over a year. He was withdrawn and made no effort to involve himself in work or even small tasks around the house. He frequently would sign to himself or complain that he was seeing things, but this pathology apparently did not perturb the family. It was only when he displayed anger and attempted to break things that help was sought.

This is not an unusual pattern with families of psychiatrically disturbed patients. What is important, however, is that the parents or relatives were extremely terrified by the destructive behavior. They displayed an intense fear and a great deal of anxiety as to just what the patient would do next. During intake interviews they would verbalize these fears and indicated that the patient would present extreme management as well as security problems. The paradox was that quite the opposite was observed. In fact, the patient usually was docile, passive, and uninvolved. In some cases management problems did present themselves, but were generally handled by the staff with little difficulty.

C. Parental Attitudes

Even though the patient did not show the extreme destructive behavior which the family members emphasized, the anxiety and fear still persisted and in some cases appeared just as intense as it was prior to the patient being admitted. Such persistent fear and anxiety in parents was most characteristically illustrated in the case of a 19-year old male. This patient was a frail, delicate, effeminate person who had literally terrorized the parents by throwing and breaking objects around the home. He attempted this behavior on the wards, but after a structured approach by the staff, this pattern ceased completely. The father, a very masculine appearing individual, was still intensely anxious and extremely fearful. His repeated concern was "What will we do if he blows up again?" Such a statement seemed paradoxical considering the father's physical strength and the patient's frail, effeminate stature.

The anxiety which was out of proportion to the reality of the situation was seemingly not the result of the father's fear of his son, but at his murderous rage at this son. As a result, the father as well as the mother did not physically intervene when the patient became destructive. Because of the parents' fears as to what they would like to do, the patient was able to manipulate the family by constantly terrorizing them.

It was evident that many of the parents felt an intense anger and hostility towards their deaf child. Limited involvement on the part of the parents with their deaf son or daughter is further illustrated by the fact that in almost 90 percent of the patients treated, there was no effective communication between patient and family, i.e., the parents did not know the manual language. In interviews the parents would frequently tell us that there was no difficulty in communication at home, yet when patient and parents were interviewed together, the gross inadequacy of their communications was evident.

In seemed apparent to us that the parental resentment of the deaf family member was fairly clear. These feelings were often perceived by the patient and further reinforced by the rejection by the parents of any suitable means of communication. Rejection and resentment were thus easily perceived by the patient and his self-concept was that of a very inadequate, limited human being.

Even when we attempted to counsel the parents, we encountered a very marked resistance to their expression of feelings concerning their daughter or son. Rigidity and denial were characteristic and were disguised by a superficial placating attitude toward the patient. In the case of the 19-year old patient previously mentioned, the parents were never able consciously to deal with their negative feelings toward this boy. The therapist felt that it was unwise to expose their anger, as it most likely would have been much too destructive for them to manage.

In 61 percent of the inpatients we saw and treated, this pattern of open hostility, and disruptive and destructive behavior on the part of the patient, was characteristic. They would break objects in the home, become combative, and in general displayed temper outbursts. When they were not behaving in this fashion, they were generally quiet, docile, and withdrawn. It was our feeling that an explosive outbreak was the one, meager attempt to relate to the parents. From our information this was the only way in which any form of involvement was possible between family and patient.

Yet there was the reluctance on the part of the parent and patient to separate through the hospitalization of the patient. This reluctance and concern on the part of both soon dissipated followed by relief on the part of the parents and the patient whose destructive behavior lessened or ceased entirely. The parents appeared satisfied that a problem had been handled.

Despite the fact that there was a behavorial change on the part of both parent and patient, it could not be consciously expressed by either. Instead, the concern was focused on the welfare of the patient.

When we began to discuss discharge plans, the parents would question our judgement as to whether the patient was well enough to leave the hospital. The apparent ambivalence was evident with many of the patients. They would sometimes openly resist leaving the hospital, but could not communicate that they did not want to go home. Others would demand to go home, and then do something on the ward that would result in their privileges being taken away from them. One patient who continually expressed her desire to go home would run away from the hospital whenever plans for discharge were discussed, not to her home, but to a friend's house. The obvious message was that she did not want to leave the hospital. It is also interesting to note that this patient was admitted to the hospital for both assaultive and suicidal behavior. She continually complained of "bad thoughts" about her parents which she vehemently denied had meaning.

D. Precipitant Factors in Onset of Illness

The precipitating causes of the patients' emotional disturbances varied. It was possible to categorize many of the causes into two broad areas. These areas are: 1) Traumatic separation or loss, or threat of loss, of highly dependent relationships with family members, and 2) Physical injury resulting in trauma. These two areas were reflected in 58 percent of the patients we saw and treated. The other 42 percent did not reveal any specific precipitants or at least we were unable to determine them. Of the 42 percent noted, the pathology was of a chronic nature and was most frequently diagnosed as organic, paranoid schizophrenic, or inadequate personality. If these patients had been hospitalized for long periods of time in state hospitals, the most frequent diagnosis was schizophrenia, chronic undifferentiated.

Although we were able to determine the precipitating factors in almost half of the patients we saw and treated as inpatients, it should be emphasized that, of all the inpatients treated, over two-thirds had long standing patterns of inadequate and marginal functioning. Many had either never worked, or had been employed in a number of jobs for only short periods of time. Some indicated that they had no desire to work. Very ineffective social functioning was characteristic. Few belonged to or attended deaf club or social meetings or had close friends. In general, a marked deficiency in interpersonal skills was characteristic.

For many the only semblance of a close family member was the mother and this relationship was that of a symbiotic tie often with sexual ramifications or a hostile dependent involvement. These pathological relationships were, in almost all cases, totally devoid of any form of personal communication. This became obvious when the parents were observed visiting the patient. The family members would make a feeble, forced effort to talk to the patient orally, and then would begin talking among themselves or remain silent. The patient would perhaps make some effort, but even less of an effort than that made by the parents.

In therapy sessions where it was felt desirable to involve the parents with the patient, the lack of communication became more evident. In such situations the parents or family members would only talk to the therapist. Most striking was that they were seemingly unconcerned as to what they would say about the patient, thus dramatically illustrating their inability to communicate anything to him beyond simple ideas. It is relatively easy to see how a patient could become distrustful of others when his own parents put forth little effort to communicate with him. If parents did try they would usually give up quite rapidly, and if the therapist did not communicate, the session would deteriorate into silence.

With the obvious evidence and even when parents were confronted with this by the therapist, the parents were reluctant to accept this lack, maintaining that communication did exist. The massive denial was so deep in many cases that a modification of the parents' attitudes was a major task and in some cases impossible.

In summarizing the patients' most frequently observed behavior characteristics, the pathology consisted of a very severe defect in ego development. In other words, our patients displayed a very limited capacity for warm interpersonal involvements. Patients would generally shun close contacts. At the same time they revealed intense loneliness and isolation. However, they seemed to fear and distrust any attempts to intrude into their isolation. Other striking features were their extreme passivity, dependency, and fragile impulse controls. Although some of our patients displayed fairly obvious and persistent psychotic-like behavior, we did not feel that the majority of patients belonged to the classical psychotic or schizophrenic picture. If any classification is to be used as a descriptive indicator, it would be the borderline syndrome (Grinker, 1968).

It has been stressed that one of the most significant precipitating factors in patients' pathological behavior was that of the threat of, or actual dissolution, of the relationship between a patient and his mother or other person who was significant to him. This precipitant was felt to be characteristic of 37 percent of the inpatients we treated.

In one case a 33-year-old woman had managed to function reasonably well until her father was told that he had terminal cancer and was expected to live for only a year. Following the awareness of this, the patient became very involved in religion and displayed delusional behavior. The patient had been very close to her father, and he was genuinely interested in her.

Her delusions were an attempt to deny the anticipated traumatic event. She insisted that another person was her mother and that both her mother and father were not her real parents. Secondary to this was the intense preoccupation with religious themes – "God walks with me; God is my my friend." In short, the intense fear of the separation resulted in the psychotic-like behavior and served as an attempt to deny the eventual loss of her father.

Another female patient who was fifty-five years old and had lived with her mother all her life became paranoid following her mother's heart attack. She began to be extremely concerned that people at work were making fun of her, and that she was being watched by others. Thus, her functioning at work deteriorated to the point where she required hospitalization.

It was not only the traumatic separation from the family or a significant parental figure that resulted in pathological behavior. Many of the patients we treated had functioned reasonably well while they attended school. Such patients had been in residential schools for the deaf, and although their behavior had always reflected considerable passivity and dependence, they had managed to graduate.

Once they had graduated, disturbed behavior began. This behavior became much more prevalent when the family attempted to find work for these patients. Thus, the ending of a highly structured situation in which the patient could passively function, resulted in breakdowns. The transition from the student to responsible adult life was too overwhelming for such individuals.

Illustrating this particular separation was a 29-year old female who had graduated from a school for the deaf. After graduation she had returned and for a time remained in the home. Her relationship with the family became extremely strained, and after she had assaulted both parents physically, she was placed in a state hospital. As long as she was allowed to function as a dependent person, her bizarre and assaultive behavior was not present. When rehabilitation efforts were made and plans for independence were explored, she developed marked psychotic-like symptoms.

Traumatic injury, disease or physical involvement contributed to roughly 21 percent of those displaying disturbed behavior. Such traumatic physical involvements included operations, illness, and other physical difficulties. A frequent physical cause was the onset of menstruation. Operations such as hernia, appendicitis, and kidney involvements were frequently associated with the onset of psychiatric symptoms. Operations near the genital area were often associated with concern regarding sexual identification and masculine adequacy.

Illustrating the onset of pathological behavior following a surgical procedure was the case of a very bright 28-year old man. He had graduated from a school for the deaf and had been successfully employed as a baker. About two years after graduating, kidney difficulties were diagnosed and surgery was recommended.

Following the operation this young man quit his job and spent about two years wandering about the country with a group of deaf peddlers. He finally returned to live with his parents. Increased agitation and paranoid delusional behavior of a sexual nature became evident, and after striking a sister, he was hospitalized.

In another case an older deaf man, who had been married and divorced twice, and who was an alcoholic, suffered a diabetic attack after a long period of drinking. Following a prolonged period in which his left hand and arm had been paralyzed, this man stopped drinking completely. It apparently was his tremendous fear of anything happening to him that motivated him to terminate his drinking, and if it were not for other symptoms, the incident would have been highly positive. But in addition, he completely withdrew from any contact and remained at home. It was only when he began signing to himself, and striking out at his bed, that his parents hospitalized him.

In addition to the 21 percent of the patients whose onset of psychiatric symptoms was associated with physical trauma, a large percentage of patients became extremely agitated at even simple, commonplace hospital procedures such as dental work or obtaining blood samples. Intense anxiety was also evident when other patients had even relatively simple surgical work performed.

It was further evident that despite a high percentage of what were perhaps psychosomatic complaints, or even genuine physical complaints, our patients were extremely reluctant to have any medical assistance beyond medication. Hence, even when in apparently severe pain, they were extremely reluctant to follow through on any medical or dental procedures.

The tremendous fear of physical trauma, even to the point of being resistant to therapeutic intervention, was of considerable concern to us. First of all, such traumas were precipitants in a relatively high percentage of our patients. Secondly, this resistance posed a problem in terms of physical management of many inpatients.

The nature of these fears is not clear. One possible explanation is that the patients most prone to traumatic reactions from physical injury, operations, etc., were exposed to operative procedures early in life and because of the communication difficulty, they never completely grasped the nature of what was being done to them.

It is quite understandable how strange and terrifying any traumatic event could be when totally misunderstood. This was further illustrated by the manner in which family members manipulated the patients to come to the hospital for treatment. Invariably almost all of those patients who responded in a traumatic way to any medical procedure were those who, in essence, were deceived in order to get them into the hospital. The most frequently used manipulation was to say, "You are going so they can find you a job." Such deception served to alleviate the patient's anxiety and was not a difficult message to communicate. This deception in the end reinforced the patient's distrust. The basis of the need for this deception thus goes back to the deficient communication skills of the family. Such lack of knowledge, expressed in lack of communication about the nature of physical-medical treatment, would also explain their fear of physical change, most significantly sexual changes in puberty.

A second explanation involves a psychodynamic formulation. It was very evident in most of our patients that they attempted to insulate and isolate themselves from any, and all, deep or meaningful personal contact with other patients, friends, and even the staff, including the therapist. It was as if these patients had a tremendous fear of the pain of rejection and interpersonal failures which all of them had experienced repeatedly in the past.

The isolation which they had experienced had in many cases, therefore, been self-reinforced and the result of this was a very rigid, fragile ego boundary which served to insulate them from interpersonal trauma.

Physical injury or medical involvements would thus symbolically represent penetration of ego boundaries and threaten their already tenuous ego structure. The patient was in essence more vulnerable. This was most dramatically illustrated by those patients who reacted with terror and psychiatric symptoms when blood was drawn or injections given.

A third explanation involves a lowered pain threshold in deaf individuals. It has been suggested by Dr. Grinker that when auditory monitoring is deficient, as in the case of the deaf individual, he tends to be much more conscious of any bodily ailment, pain, or physical intrusion. It is similar to sensory deprivation, where the lack of external stimuli results in a person's becoming much more cognizant of his own body sensations, and thereby exaggerating their importance. With deaf individuals who are tremendously isolated, as with the majority of our patients, their major concern is thereby focused on themselves, and any ache or pain is magnified out of proportion to the reality of the sensation.

IV. Individual Psychiatric Treatment

The New York State project (Rainer, 1966) outlined three basic approaches to therapy with deaf patients. These three areas follow Wolberg's (1954) outline and are:

1) the reconstructive insight model most characterized by the psychoanalytic paradigm,

2) the reparative model in which re-education and the modification of faulty or inappropriate learning is characteristic, and

3) the supportive model in which suggestion, persuasion, coercion, and environmental manipulation are the basic techniques.

Our experiences indicate similar findings as to the type of therapy used. It is important to keep in mind that despite the difficulties of the first two methods, some of the basic paradigms could be used in the therapy hour with deaf patients. Although extensive use of dreams, interpretations, etc., were not applicable, the therapist could use these techniques for his own edification as to the conflicts and dynamics of the patients.

Our first and foremost problem was to convey to the patient just what the doctor was doing. It soon became very evident to us that most patients had little or no idea as to the nature of psychotherapy. Many were terrified of their separation, of the hospital, and of the idea of someone trying to intrude on their isolation.

In addition, the patients frequently had fantasies which revolved around an operation so that they would be able to hear again. Thus, the doctor who provided treatment was immediately cast into a role which he could not fulfill. Although this is not uncommon with hearing patients, it is much more complicated with deaf patients from the standpoint of their frequent rigidity, isolation, and most of all the obvious communication deficit.

Hence, the first problem to be dealt with was communication. Despite the fact that the majority of patients had some form of manual language skill, this was often quite limited. Their use of the manual language was frequently poor, being combined with home or individual signs along with some formal sign language. Their lip reading and speech skills were rarely adequate. Many preferred to use their speech and lip reading skills and were reluctant to, or would not, sign. In one case, a patient, who had attended an oral school would only fingerspell despite the fact that he appeared to understand signs.

It was therefore very evident that the therapist was going to have to be very flexible in his communication approach with patients. For those who had manual skills and would use them, communication was not insurmountable and could be accomplished; for those without a formal language of any kind, or who refused to sign, the therapeutic task was more difficult. In such cases writing allowed for limited communication.

Most significant was their reluctance to discuss or express affect. For such patients, the affect loaded sign language was threatening to them and conveyed meaning which was overwhelming or frightening to them. In such cases, as well as for those deficient in manual skills, the use of writing was thought to be beneficial.

Writing, as limited as it may be with many deaf patients, sometimes served to form a relationship. Writing by its very nature focuses on a non-threatening object, and in a sense was a more acceptable mode of communication for some of our deaf patients. The very act of directing communication to a piece of paper removes some of the direct personal and emotional contact between patient and therapist. In such a way the patient can gradually become involved with the therapist. As the sessions progressed, and the patient became more comfortable with the therapist, some signs and fingerspelling could be introduced, and finally writing could be dispensed with entirely.

With a few of our patients writing was not satisfactory. These patients had a limited vocabulary and could not convey their thoughts by this method. Thus, the therapeutic task was much more difficult because all avenues of language were closed. One approach which proved to be of value was using picture drawings. With two of the patients with whom this was attempted, some success was evident. One of these patients was a severely psychotic young deaf man who came from Germany. He knew little English and did not know the signs. Since he displayed an interest in art, this technique was attempted and he readily became enthusiastic. In this patient's case, a precipitant in his psychiatric disturbance had been a double hernia operation. Since he had been prone to draw human figures, especially deformed or with obvious sexual conflicts, the need for, and the nature of the hernia operation, was discussed.

Another patient with a severe language deficit revealed marked problems in impulse control. He was tremendously isolated and his major preoccupation was with religion. A major focus was on nuns, with whom he identified. This patient's behavioral difficulties became evident when he was about seven years old. At this time his mother gave birth to normal hearing twin girls. The parents were obviously relieved, and as a consequence the mother's previous infantalizing behavior was lessened. The boy's temper tantrums became pronounced and he withdrew into a fantasy-like existence.

One aspect of therapy was to encourage this patient to express some of his feelings in a more appropriate manner. Since he had little language, written or sign, the use of picture drawing as communication was attempted. Through the use of this technique the patient was able to discharge some of his hostile feelings toward his sisters. In addition to the immediate therapeutic gains, the therapist was able to more fully understand this patient's inner life.

The graphic techniques mentioned are expedient approaches to therapy when there is either a lack of knowledge of the signs or a resistence to its use. The mere fact that the patient and therapist are reasonably fluent in the language of signs does not mean that therapeutic communication is going to be effective. The very nature of the manual language poses limitation. One marked difficulty is the clarification of the precise meaning of a particular word or statement made by a patient. Rothstein (1968) most cogently emphasizes this problem.

> The patient may say, "I feel. . .(blank)." If the therapist asks, "You feel what?" confusion may result. If the therapist asks, "What do you feel?", it may be treated like an entirely new subject, leading the patient to tell about how he feels in a different context. If the therapist finally tries to say, "You said you felt something but I didn't understand what emotion it was that you felt," he might as well give up. If the therapist guesses at what he thinks the word was, and asks, "(Do) you feel depressed?" the patient may agree just to get it over with . . .p.18.

Attempts at preciseness in therapy are frequently baffling and confusing to the patient and frustrating to the therapist. The same is often true of attempts to elicit feelings from a patient. If the patient describes an incident, the therapist may focus on how that particular incident made the patient feel. Here, again, the therapist may be frustrated in that the temporal sequence of the feeling in time is not recognized or understood by the patient.

Thus, the patient does not connect the question as it relates to what has happened in a past event, and merely says that he feels such and such now. To clarify this disrupts the therapeutic process and conveys to the patient that he is limited mentally because he cannot explain himself. This break in the elucidation of temporal sequences may reflect the patient's pathology, but may also be inherent in the language of signs (Whorf, 1956) or in the lowered abstract skills often considered characteristic of the deaf.

An interpretation regarding a patient's behavior may sometimes be a very tedious process. With many of our patients the use of the interpretation was not particularly therapeutic. This is not to say that it has no value to some patients. We are indicating that with the deaf it has its limitations and when used it must be concise and related as much as possible to a concrete situation.

An example of the difficulty in the use of interpretations is seen in the following case. This patient was an intelligent woman in her forties. She had responded fairly well to treatment, although she had not been able to deal with her very strong need to remain dependent upon the hospital. When discharge plans were made, she would run away from the hospital. This occurred twice and the message was obviously "Please take care of me; I'm not ready to leave."

The interpretation of this behavior was made numerous times to her without apparent success. She continually denied that the interpretation was valid. Although this type of denial is not uncommon in hearing patients, it was our impression that the marked difficulty in helping her understand this behavior was not characteristic of hearing patients. It appeared to the therapist that the interpretation of this behavior, which by its very nature was an abstraction of a past event, was at least in part responsible for the difficulty she had in comprehending her motives. It is of note that once this patient had been discharged and was seen as an outpatient, she could acknowledge the feeling of wishing she was still an inpatient. At this time the dependency feelings were discussed and past behavior related to these feelings with some success.

The problems inherent in the manual language are not all related to the peculiarities of the language or the patient's limitations. The therapist must orient himself to a visual mode of communication, and despite his experience with deafness, problems do result. One problem is the difficulty encountered in understanding the covert message conveyed by the patient's communication. Patients' signing varies, and especially with the disturbed deaf, language usage is often diverse with a mixture of unfamiliar signs. The therapist must observe closely what is said, translate, and interpret the meaning to himself. This is not a major obstacle in everyday conversation with the deaf because meanings are not interpreted in such conversation. In therapy it becomes a problem, and it is even more difficult with psychotic patients.

If a therapist does not understand a word or phrase, asking to have it repeated often adds to an already complex problem, with frustration for the patient and therapist as the end-result.

One way in which we dealt with this situation was to operate just on a conversational level with the patient until the therapist became accustomed to the patient's idiosyncratic communication. If the patient was fairly intact emotionally, a mutual adjustment in communication was made.

The problems in communication varied in terms of the severity of illness, language facility, and educational level. Obviously, those who had very good communication skills were more appropriate for, and responsive to, an insight therapeutic model. These patients were few, hence traditional therapeutic techniques alone were not realistic for most patients.

This was even true of the supportive approach. It was difficult to provide support and encouragement when a patient made little effort on his own. Support is valuable, but it is difficult when motivation is either very limited or lacking, and there is little acceptable behavior to support.

Therefore we followed a more concrete action-oriented approach in which the therapist himself was actively involved in specific tasks with the patient. We would set limited goals for a patient, concentrate on immediate concrete problems and actively participate in these activities. For example, many of our patients were fearful and reluctant even to transfer from one ward to another. These same patients were unwilling to go for job interviews, participate in patient activities, or leave the hospital.

In such instances the therapist would lead the way by actually initiating the desired behavior. In the case of a transfer to a different ward, the therapist would take the patient to the ward, show him around, and introduce him to the staff and patients. Following this the patient and therapist would discuss what had happened, and whatever feelings the patient may have had. In another case, a patient had been placed on a job within the hospital and had been doing poorly. The therapist accompanied the patient to the job, observed his work, and actually helped him for a period of time. Later the same day the specific difficulties on the job were discussed in a therapy session.

This technique served two basic purposes. First, the therapist's involvement with the patient provided a fairly accurate picture of his behavior. This behavior was related to a concrete situation and the immediate discussion related to his behavior, providing material which could be discussed with the patient. Thus, therapy was not a vague, unrelated reference to some long standing past event but concrete, practical, and recent. Specific behaviors could be supported and encouraged. Secondly, the deep level of involvement on the part of the therapist clearly demonstrated that he was genuinely interested. He was not just talking to the patient, as no doubt many patients had experienced in the past, but providing a clear message. "I am interested in you." This type of message fostered a beginning trust which would enhance further therapeutic relationships.

This level of commitment poses new problems. For the most part, the involvement with a patient sets up expectations and fantasies which may, or may not, be detrimental to the relationship. Yet such material can be effectively dealt with if the therapist-patient relationship does exist.

Most of the patients we treated had never experienced any deep, positive, meaningful relationship with another individual, so it is quite understandable why they remain passive, uninvolved and isolated. The active orientation of the therapist was merely a partially non-verbal intrusion into the patient's isolated world. It did not completely eliminate all of the patient's suffering, but it did provide the patient with the capacity to make some attempt to deal with the world, rather than passively avoid the problems of living.

Once the patient had developed a greater trust of the therapist and some improvement was noted, the patient was often able to converse more and express feelings which heretofore had been kept to himself. This most frequently occurred once the patient had been discharged and continued in outpatient treatment. Some patients, even the most disturbed ones, who had resisted discussion of any personal feelings, began to be more open. This occurrence was felt to be partially the result of the trust which had been established initially through the therapeutic approach previously discussed.

Even when the patient became more open in expressing his feelings about himself, considerable difficulty remained in implementing interpretations. Some interpretation was possible, but by far the most success was obtained in merely encouraging the patient to discuss events which were recent, and for the most part, non-threatening.

Of particular concern to us was to encourage expression of affect. This, as has been pointed out, was very difficult for all of our patients. Most difficult was the expression of anger, or any negative affect, which was present in nearly every patient. This was almost always related to the patient's deafness, and to the fact that in the family there was little communication so that the patient felt rejected and left out of the family's activities.

Although it was not always possible for the patient to discuss these early painful experiences, it was possible for him to connect the feelings about deafness to current everyday situations. For example, one patient continually was obsessed by the cold air-conditioner at work and how it bothered her. She never was able to grasp the interpretation that her concern about coldness from the air-conditioner was in reality the fact that she sensed the distance and isolation from her co-workers. The idea of "cold shoulder" from co-workers was never grasped, but she could discuss the difficulties she had in communicating with the hearing co-workers, her being left-out and alone, and other painful experiences.

The importance of discussing these feelings as they relate to a patient's deafness was felt to be therapeutic. First, it was possible for patients to focus on, and thereby become cognizant of, their handicap, which almost always was denied. Hence, it was possible for them to begin to mourn their loss, and in doing so, they could be more realistic about the problems posed by their handicap.

This has been discussed by Easton and Krippner (1962) from an existential viewpoint. In essence, they conceptualize the therapeutic process with handicapped patients as helping the patient face his anxiety and despair about his disability, but at the same time helping him to find personal meaning in his suffering. It should be noted that an existential orientation on the part of the therapist is quite appropriate because of deaf patients' tremendous avoidance of the classical existential dilemma in which fear of commitment and involvement in life is characteristic. In short, they totally lacked personal meaning in life. Secondly, and perhaps equally important, affect, especially anger, was discharged. The fact that the therapist could accept this anger by remaining silent or supporting the affect, indicated to the patient that it was safe to have such thoughts and feelings.

The idea that one could think and feel negative thoughts was a major therapeutic goal. As has been previously commented upon, nearly two-thirds of our patients vacillated between expressing rage-like outbursts and withdrawing for long periods of time from any personal contact. Our observations of them on the wards and during therapy revealed their tremendous effort to remain isolated and avoid any form of affective discharge.

We were concerned and puzzled by this behavior. One tentative explanation is that deafness severely restricts the development of even rudimentary language. Hence, the capacity to discharge affect is grossly limited because deficiency in subtle language symbols severely restricts the indirect discharge of the emotion. Affect remains at a very primitive level. The language of signs allows for expression of affect, but this avenue does not completely provide for a wide variety of subtle meanings. It is an affect-loaded language system similar to an acting out language. That is to say, many of the signs used for conveying certain types of human functions and behavior are very close to pictorial representations of the actual behavior itself.

The reactions of people who are not familiar with the deaf frequently reflect discomfort, fear, and anxiety when they are around the deaf. Partly this may result from the obvious communication barrier. Yet this barrier does not totally explain the reactions of those unfamiliar with the deaf. For instance, one is usually not anxious or fearful around a person in a foreign country who speaks a language one does not know. A further illustration of the fear is the fact that the deaf are frequently called "dumb", "crazy", and even "Indian-like."

An interpretation of the meaning of these remarks, which do not appear to be uncommon, is that the use of sign language is equated with a very primitive type of person who lacks impulse controls. The deaf person's behavior is thus felt to be unpredictable, and the reaction to this kind of situation is fear and anxiety.

The deaf individual most likely perceives this expression of fear. He may thus begin to think the expression of negative, and very likely positive, affect is bad. The deaf individual may believe that the expression of affect is bad because of the awareness that the sign for a particular affect or behavior is very close to the actual physical expression of the feeling. In other words, to express the thought is to actually perform the thought. Feelings as well as thoughts are thus to be inhibited, and/or repressed. It is interesting to speculate that the resistance on the part of many educators to the formal teaching of the manual language may in part revolve around the foregoing explanations.

If the treatment of deaf patients can help them learn that affective expression is appropriate, and thereby help them avoid denial of internal thoughts and feelings, they are more likely to feel more comfortable and in a broader sense, more accepting, of themselves. In essence, one can have negative thoughts and feelings and one does not have to act on these feelings.

V. Ancillary Therapeutic Techniques and Patient Management

After the project began, and we had time to reflect on the treatment of deaf patients, it became clear to us that individual treatment alone was not going to be as successful as we had hoped. Individual therapy, even with the action-oriented approach, was a long-term process and it was evident that many of our patients would require intensive treatment beyond our time limit. The alternative was to develop a total therapeutic milieu for our patients in which the learning of new behaviors could be fostered both in individual therapeutic contacts as well as in other potentially meaningful staff and patient interactions. We utilized group therapy, group meetings, ward meetings, and activity therapy. In addition, patients were encouraged to go on field trips and other activities in which the total inpatient population participated.

A. Group Meetings (Musters)

Most characteristic of deaf patients was their isolation, passivity, and distance from any meaningful personal contacts. Even when around other deaf patients, they made little effort to involve themselves with one another. In essence, they appeared to desire to remain alone and to resent intrusion.

We were not able to cluster the deaf together because of the hospital ward arrangement. Hence, there was very little identification within a unified group, which had the single common factor of deafness. As an alternative we attempted to force unity by having morning meetings. These meetings were suggested by one of our psychiatrists who perceived them as a way in which the deaf patient would become cognizant of being one with deaf people in general.

These meetings were likened to military musters. They were not group therapy, but merely gatherings in which specific activities of the day were discussed or any information regarding hospital rules explained. These meetings also functioned as a preparation for later group therapy.

At first there was little interaction among the patients, but as these meetings continued, some interaction became evident. This was in part fostered by the fact that the therapist or other staff member who supervised these meetings made a point of being late. With the deaf patients together in a small room it was hoped that they would begin to initiate some communication. Some interaction did occur, and in the short time each meeting lasted (10-15 minutes), some group cohesion developed, but it was very tenuous.

Ideally, a clustering arrangement is more desirable in that there are both management and psychological advantages to such a plan. With regard to the latter, the patient is made aware of his deafness. This is a very important factor in his therapy because denial of deafness, and its implications to the individual, is one of the most pathological aspects of many of the patients. The discussion and resolution of this denial in individual treatment was often too threatening for the patient, at least initially. Clustering patients in meetings as previously outlined was one way in which the reality of deafness could be emphasized, and later explored, in group or individual therapy.

The early morning meetings thus served three purposes: (1) to develop a cohesive feeling and intrude on their isolation; (2) to make them aware of the fact that deafness was the single factor in their grouping for the meetings, and (3) to provide general information on how specific activities could be planned.

B. Ward or Unit Meetings

The Psychiatric and Psychosomatic Institute of Michael Reese provides similar meetings for hearing patients on each of the five units for discussion of events or problems specific to each unit. We felt that since our patients were part of these units, they should also participate in these meetings. This posed a problem.

Lip reading is not an adequate communication modality which enables a deaf patient to understand what hearing individuals are saying. It was thus necessary to provide an interpreter to attend each meeting so that what was said by the other patients and staff could be translated into signs.

As has been indicated, some patients were not fluent in the manual language, but by the very fact that they could obtain some knowledge of what was being communicated, their isolation was intruded upon. Some of our patients eventually began to make comments about the ward, and this frequently facilitated some discussion as to the hearing patients' concern and feelings regarding the deaf patients. Again, intrusion and involvement were being fostered.

C. Activity Therapy

The psychiatric hospital at Michael Reese has an extensive activity therapy program which includes a hobby-craft shop and facilities for playing games and other activities. Since our goal was to break through the isolation of the patient, we encouraged our patients to involve themselves as much as possible in these activities. To do this it was necessary to work closely with the activities therapy staff. The key members of the activities therapy staff learned the basic fundamentals of the sign language and could assist in any plan developed by the therapist. Again the goal was to provide as much activity for the patient as possible by involving as many ancillary facilities and staff as was realistically possible.

D. Ward Management

It has been emphasized that almost all of our patients had traumatic reactions to any medical procedure. During hospitalization all of our patients were subject to some form of diagnostic techniques. Blood tests, injections, and even surgical diagnostic procedures had to be ordered by the medical staff. In order to avoid traumatic reactions from the patients we followed a prescribed plan in dealing with these situations. When a blood test or other procedure was ordered, the therapist would explain to the patient exactly what was to be done and why. If the procedure was complicated, then it was either explained by the therapist, or the medical consultant's explanation was translated into signs by the therapist. Following this the patient and therapist discussed the procedure.

In one case a patient was to have a peritoneoscopy. The therapist actually accompanied the patient to surgery and was with her following the operation. Although this is not usually part of psychotherapy, we felt it to be essential. First of all, the traumatic reactions to the operative procedure were minimized. The patient knew what to expect and was given support by her therapist. Secondly, the relationship was improved by the clear message that she was not being deceived or manipulated. The trust relationship was furthered by these clear, concrete, actions by the therapist.

VI. Summary and Conclusions

In the Fall of 1966 we began a project for the treatment of psychiatrically disturbed adult deaf individuals. Our goals were to develop guidelines for the inpatient management of deaf patients and to determine what role deafness played in the psychopathology observed.

We treated a total of 38 inpatients. With few exceptions we were able to evaluate their parental and/or family interactions. The two most significant aspects of the patient-parental interaction were the almost total lack of communication between parent and patient, and the pathological relationship between them. The relationship was characterized by either a hostile-dependent involvement or a symbiotic tie with the mother. The most striking feature of this relationship was that there was, in almost every case, a gross lack of communication.

A characteristic feature of the parental-patient relationship was the obvious turmoil in the home through which the patient was able to terrorize the family members. The patient was literally feared by his parents, but we did not observe this behavior to any great degree in the hospital. It was thus our impression that parents frequently passively accepted this behavior, simply because any attempts on their part to intervene would have brought out their unconscious, destructive, hostile, and rejecting feelings and impulses toward their deaf offspring. It was only when the disruptive and destructive behavior became intolerable that the parents sought outside help.

Patients' behavior observed by the staff revealed a very marked deficiency in ego development. Most characteristic was their very marked dependency, isolation, and fragile impulse controls. They were obviously lonely, but on the whole, they resisted any attempts to engage in a close emotional relationship with either the staff or with other patients. They desired isolation and would resist attempts to intrude on this condition.

We are reluctant to provide any diagnostic category or label to deaf patients since we believe that such labeling, at least at the present time, is misleading when deafness is present. Although the borderline syndrome most closely approximates the behavior characteristics of deaf patients, we feel that we still are not cognizant enough of the parameters of the behavior of deaf patients to categorize them. It is our belief therefore that categorizing or labeling should be either modified or not used at all for deaf patients.

In over 50 percent of our patients, the precipitant causes of their pathology revolved around either a fear of separation from significant relationships or early traumatic physical injuries or operations. Both of these precipitants are felt to be closely related to the parental situation in which communication was minimal, or totally lacking.

In view of this finding, we feel that deafness plays an indirect role in disturbed patient behaviors. Yet we cannot say that there is a high correlation between deafness and psychopathology. If any tentative conclusion is to be drawn it is that when deafness is present in an offspring, the degree of psychopathology is in proportion to the lack of communication between the child and significant family members.

Individual inpatient psychotherapy of the traditional insight model was suitable for patients who had nearly normal communication skills. The most disturbed patients had limited communication skills and were not responsive to either non-directive or supportive therapies. Instead, we followed an action-oriented model. This approach concentrated upon immediate concrete goals where support and encouragement could be provided. This technique required more personal involvement on the part of the therapist than is traditionally emphasized. Although this frequently required the therapist to participate in therapy outside of the consulting room, it proved to be reasonably successful. The therapist, for example, might accompany the patient in a specific outlined activity and discuss the patient's behavior while he was immediately involved in it. This approach was of value for two reasons. First, the patient was more likely to understand what errors or faulty behaviors were present and to modify them if they were pointed out and discussed within the immediate context of the situation. Second, the patient was more likely to begin to trust the therapist simply because he was actively involved with the patient.

In addition to the individual therapy, the attempt was made to provide a total therapeutic milieu. This included group therapy, patient meetings, activity therapy, and involvement with other hospital patients. Our rationale for total participation was that it was one way of intruding on the patient's isolation.

On the basis of our experience in the inpatient treatment of the psychiatrically disturbed deaf the following conclusions and recommendations are made.

1) Inpatient treatment of the deaf is most successful when the patients are grouped together in one unit. The interaction between patients is believed to be therapeutic.

2) Where grouping of deaf patients is not possible, emphasis should be placed

upon as much interaction as possible among the deaf patients.

3) Psychotherapy should emphasize an action-oriented approach in which immediate concrete behavior is discussed and modified. Although it is essential that the therapist be fluent in the use of the language of signs, it is not always desirable or feasible to use this form of communication. With some patients who are resistive to signs, or do not know the manual language, the use of writing, or even drawing, is therapeutic. The latter communication techniques are limited and should be temporary with the eventual goal the use of manual language.

4) An essential staff member in any attempt to provide psychiatric treatment for the deaf is a teacher skilled in the use of the manual language. One characteristic of many of our patients was their limited communication skills. Beyond the immediate individual treatment, part of the therapeutic process is to help the patient accept and communicate with other deaf individuals. To do this a knowledge of the manual language is essential.

5) Although it is unrealistic to expect nurses, aides, and other staff members in a hospital to be fluent in the manual language, it is essential that those who have more than just casual contact with deaf patients, have at least some skill in the use of sign language and fingerspelling. Such knowledge will reduce both the staff's and the patient's anxiety.

6) When any medical or dental procedure is provided for the deaf patient, considerable time should be spent in preparing the patient. This preparation should include a simplified explanation of what is to be done and a discussion of what will be the immediate symptoms or feelings. If possible it is suggested that a staff member who is fluent in the language of signs be present when any medical procedure is done. This will lessen the patient's anxieties and fears and reduce the possible traumatic reaction characteristic of deaf patients.

7) Although we believe individual psychotherapy of the type previously outlined to be of value, its success is largely dependent upon the use of other therapeutic techniques. Ancillary hospital facilities should be utilized to their fullest extent. In addition, community resources, especially vocational rehabilitation agencies, should participate fully in the therapeutic plan for each patient.

8) Crucially important is patient follow-up. We were most successful in the rehabilitation of deaf patients when outpatient treatment was provided.

9. Group Therapy

by Louise Collums

General Group Characteristics

THE FORMAL group meetings for deaf individuals hospitalized at P&PI began in November, 1967, and lasted until Sept., 1968. At first, meetings were held once a week. These were later increased to twice weekly, and finally three meetings a week were held. The frequency of meetings was increased to see how greater intensity would affect group interactions and involvement. The number of individuals in the group varied at any given time from three to seven, depending upon how many patients were in the hospital. Usually, however, group members numbered four or five. The group was an "open" one; i.e. its membership was continually changing, as patients were admitted to, and discharged from, the hospital.

Generally, all deaf patients were required to attend the meetings, the only exception occasions when an individual patient would be too disturbed to tolerate time away from the structure, control and protection of his unit and/or the anxiety which the relatively nonstructured group situation seemed to generate. This "exception" points to the diversity of group membership in terms of their psychiatric illnesses and their manifestations. At any given point in the life of the group, membership varied with respect to patients' contact with reality, need for structure and control, and ability to relate in a group situation. Some group members have been overtly psychotic, while others have, in fact, tried to discuss real issues in a reality-oriented way.

In addition, individual members differed in sex, age, and socio-economic background, as well as communications ability. At one period, the group was comprised of (1) a white Catholic working class married mother of three in her thirties who was extremely paranoid and often delusional, but who had a good ability to communicate both orally and manually; (2) a 59-year old white unmarried Jewish woman, from a reasonably well-to-do family, also somewhat paranoid, and dependent but more neurotic than psychotic, who could communicate manually quite well; (3) an unmarried Protestant woman in her mid thirties who was quite psychotic but "expressively clear" in her communications; (4) a 19-year old schizophrenic male with poor language ability from a middle-income German Lutheran family; and (5) a 26-year old Negro male, very disorganized and psychotic from a poor small-town rural background, who was also limited in his ability to communicate with depth or coherence.

It would appear that other than the fact that the members were deaf and in a psychiatric hospital, they had little else in common. Family background, in socio-economic as well as psychological terms, and life circumstances, dictated different ways in which each developed, given the common reality of congenital or prelingual deafness. Each individual developed different ways of coping with growth, each developed specific, characteristic ways of adapting, and a unique way, to a greater or lesser degree maladaptive, of responding to internal drives and external stimuli. Characteristic defensive styles ranged from near complete withdrawal from human objects, to projection, to reaction formation i.e., the whole gamut of psychological mechanisms.

Group Goals. Specific group goals could be subsumed under two broad headings. First, it was hoped that the group could be a means of helping patients cope with the stress of their hospitalization. Work in a setting with others on specific issues related to hospitalization and the behavioral difficulties which contributed to hospitalization might be ego building. Effects beyond the hospitalization (the second goal) might incorporate new ways of coping in society for future use.

It was hoped that the formal group would be a means of breaking through the isolation the patients seemed to experience during their hospitalization. Deaf individuals spend much of their lives in isolation from meaningful interaction and exchange with people and the structure of the hospital reinforced this sense of isolation. Although the patient, prior to hospitalization, may have become increasingly alienated from his familiar environment, nonetheless, there were still some recognizable elements in it.

With the hospitalization the deaf patient was bereft of any reference points. There were no familiar sights to sustain him. He was living with total strangers. For instance he saw a vast number of attendants most of whom had never had contact with deaf individuals before and were unable (because of lack of language and degree of illness) or too frightened to communicate with him except in the most rudimentary ways, i.e. through simple sentence, noun-verb writing, or through primitive body and facial gestures. Some staff members had picked up a few signs and could fingerspell the alphabet, but communication was limited to conveying basic wants, needs, and hospital rules.

Communicating through writing even the barest essentials was frequently difficult for most of the patients because they seemed to possess poor language skills. The communication difficulty was a two-way street. In addition the psychiatric illness itself often heightened anxiety and confusion, compounding the difficulty.

The hospital structure, which existed long before the deaf project began, also increased the sense of isolation for the deaf patients. Placement on any of the 5 units was determined by the patient's need for structure and control. Seldom were more than one or two of the deaf patients on the same unit at any given time. The deaf patients experienced different degrees of disturbance so they were placed on a unit that was illness-appropriate.

Initiation of the group stemmed from the hope that since deaf patients shared a common sign language, providing them an opportunity to meet together and discuss commonly experienced feelings and situations might be a way of helping them (to help each other) and to offset the built-in isolation of the hospital. By meeting together regularly, the unfamiliar might be made more familiar also. If talking about difficulties and feelings can help one to understand them better and to deal with them, some better adjustment might be attained. Helping the patients who had not been taught to do this to develop some means of identifying and expressing their feelings in language might possibly stimulate ego growth.

It was also hoped that in the group situation the better integrated patients could be reality testers for the others and could confront them in a live situation with some of their more inappropriate, or even bizarre, behavior.

Group Processes: Socialization and education, in a very basic sense, were quickly recognized as needs of the group members. Basic amenities such as talking in turn and waiting for others had not been incorporated into many patients' behavior. It had been supplanted at the least by a wish for immediate gratification and inability to tolerate frustration. Most patients were appallingly unaware of basic facts, such as the name of the hospital and its location, the names and functions of key staff on their units or those working with the deaf project, not to mention a frequent lack of understanding as to why they were in the hospital. They frequently knew next to nothing ot their rights or responsibilities as hospital patients.

In sum, the group was to be a forum for deaf hospitalized individuals to communicate with others who also communicated by sign language. Viewed as an adjunct to individual therapy, it was hypothesized that the shared experiences of deafness and hospitalization might be some basis for mutual helping, that while in the hospital some form of group cohesion and group identity might emerge, and that individual ego growth could occur in the group setting.

Results: The general conclusion from the specific group experience was that only a minimal degree of success toward the aforementioned goals was achieved. Group members were not able to relate extensively to each other "verbally" around events and feelings. Much affect was often generated in the meetings and quite visible to the therapist, but for the most part not dealt with, even nonverbally. Patients would often cry but be unable to express why. They would often look angry and sometimes pace and ask to leave, but could not verbalize a reason. The main frustration for the therapist was that it seemed as though much was happening in the group, but there was no linguistic handle available to deal with it.

Several possible explanations for this come to mind. Not only were they often unable to express themselves in the conventional (writing) mode but also their expressive inability was a reflection of the toll psychiatric illness had taken and/or a reflection of their limited conceptual ability. The concept of "feeling" was difficult for many patients to grasp. With much effort the therapist attempted to describe, or make more concrete, different feeling states such as anger, happiness, confusion, sadness, boredom, depression, frustration, contentment; and to describe how a patient might feel at a given time.

Patients would, when asked "How do you feel today?" respond "My back hurts" or "My feet pain me." "I need a checkup from the doctor and pills to make me well." In many instances this could indeed have been denial, but for most patients it was a genuine lack of language knowledge of any notion of the dimension of feeling states.

Most patients seemed to exist in a "verbal expressive void." One could offer possible reasons why patients would not respond in the group, such as suggesting that their lack of knowledge was temporary and illness-induced or was passive-aggressive behavior, a way of expressing anger at the therapist which had transference meaning to the patients. It seemed more likely, however, that unconscious resistance was frequently not the issue, but that the patients literally lacked the linguistic tools to label or differentiate the mass of feelings and the fragments of nonverbal understanding and misunderstanding.

Another possibility for the relative lack of achievement might do with the fact that the patients' varying levels of psychic functioning and diverse backgrounds made it too difficult to arrive at a common ground of communication. It is not easy for a neurotically depressed middle-aged female patient to react with much more than anxiety, confusion, and probably an intensification of her own fears of being "crazy" when a psychotic young man's primary process thinking is directly and openly communicated to her. It would seem difficult for a Jewish, neurotic female from an economically comfortable family and who had much need to deny her emotional poverty to relate consciously and verbally to a young, economically poor and religiously fundamentalist psychotic woman's insistence that "Christ is the answer". At the most basic human level, both may have experienced similar emotional deprivation and trauma and a shutting out from affective participation in their families' lives. Individuals seemed to lack the psychic energy, the linguistic tools, or the self-esteem to reach out.

When the group members related to each other around nonverbal tasks, evidence of sharing, of give and taking were seen. This would seem to lend some weight to the difficulty in "verbal" communication. At several different times during its life, the group planned and prepared a group dinner. Invariably, the dinner was a success. There were efforts to invite a withdrawn patient to sit with the other patients, and not to eat alone in another part of the room. In the formal meetings the patient's isolation would be ignored or at least denied.

Individuals were solicitous of other patients, making sure they got enough to eat. Among the patients who prepared dinner, there was competition to do the most and prepare the best dish, with special efforts to gain the therapist's eye and her approval for work well done. There was healthy resistance to cleaning up. I sensed a real sense of relaxation, a wish to remain at the table after the meal and not to leave and destroy the good feeling generated.

This was manifested by smiles on their faces and no effort to leave the table after the meal was eaten. The meals were mostly characterized by silence, but that silence seemed to reflect contentment and not anxiety, unlike the silence in the formal group meetings. In a real sense, group members had successfully related to each other and had accomplished a predetermined task in which they could all take pride.

Another possible explanation for the group's inability to communicate linguistically may have had to do with its openness, i.e. constantly changing membership. For the first five weeks of the group, its membership remained constant. No new members entered the group, and no members left. During that time it seemed that some significant communication occurred between members and some development commonly found in beginning groups could be seen.

For example, in the first meeting there was discussion about things outside the group. One patient suggested that the group go to a movie. Another said he wanted to go home. Another talked about knitting in adjunctive therapy. Questions and comments were directed towards the leader, and resistance was encountered when the leader redirected questions to them. There was little interaction among themselves, except on a one-to-one "personal" level. As a whole the members seemed quite anxious, unsure of expectations and competitive for the leader's attention.

In the second meeting, one member, a psychotic older man who had been hospitalized in a state hospital for over a decade before being brought to P&PI said he was lonely. (The patient was hospitalized for a number of months at P&PI, then got a job as a janitor, but became psychotic and nonfunctioning on the job and returned to P&PI). Another patient followed this by saying that he wasn't lonely, he watched TV, thereby cutting off the first patient's efforts to make emotional contact with group members.

After the patient group began changing more rapidly, less affective exchange occurred. Silence was the byword. The group was in a constant state of losing old members and gaining new ones and having to get to know them, not an atmosphere conducive to working on problems.

The writer's conclusion is that groups ought to be explored further as a therapeutic mode for deaf hospitalized psychiatric inpatients. Activity and task oriented groups where the expectation is on doing, and not talking, should be viewed as a tool for patients who lack linguistic competence and/or have difficulty in relating to others. Education and socialization in groups should also be explored. "Talk oriented" groups can be tried but realistically only for those with at least average language skills.

A group experience with normal deaf adolescents made the therapist more confident that traditional groups can be of some use to deaf individuals. In a specific time-limited "sensitivity type" experience, a number of adolescents, gathered from different geographical areas in the United States, were able to talk meaningfully about feelings related both to common group phenomenon and more personal issues.

For example, in beginning groups a reluctance to talk, to express opinions, to reveal much about oneself is common. To reveal oneself among strangers is a risk. What will the others think of me is a question often consciously on people's minds. With supportive encouragement, the adolescents were able to verbalize their reluctance.

> One girl said that in her school she was a leader. She felt she was well liked and had much to say. She went on, "The plane trip (to the convention) was my first flight. I was so excited about flying and about meeting new kids from different schools. When I got here and saw all the kids I didn't know I got so scared. My teacher told me to go make friends but I couldn't – I couldn't think of anything to say."

Others concurred. All seemed genuinely surprised when the writer acknowledged that such hesitation and nervousness in new situations were natural reactions and had to do with a natural wish to be thought well of and liked. Their real surprise, along with a massive lessening of tension suggested to the writer the possibility that feelings had seldom, if ever, been discussed and accepted. This was reasonably confirmed in one person, a young man, who had to make a presentation before a larger group. He told me several times that he was very frightened of getting up before a large audience. It was as though he was testing out a new way of dealing with what he had felt but had never verbalized. Each time I accepted his feeling, at the same time pointing out that he was still able to do the task in spite of his hesitation. This too he accepted and began verbalizing to me with a broad smile of satisfaction.

> "I was nervous and shaky before the audience but I was still able to give my report."

My suspicion that it was common for these deaf adolescents to live in a world where feelings were not acknowledged by significant people in the environment was further confirmed by the two following:

> One girl said, "Once a week ever since I can remember, my mother calls up my grandmother who lives in another town on the telephone. They talk for a least 15 minutes. When my mother hangs up, I ask her how my grandmother was and what she was doing. My mother says she is fine. I ask her what they talked about. She says "nothing. I just asked her how she was." The girl went on . . . I know they talked about more than that, and I wish I knew what my grandmother was doing. It's so frustrating that sometimes I just go in my room and cry."
>
> A very sensitive teacher, who happened to be deaf, said to me at one point, "When the kids come back to school after vacation, they most often tell me that they had miserable times as though they've had no one to talk to. I know that's true because it was my experience. Is it all right to tell them that I know that, that I understand how awful it was for them?

These two incidents indicated to this writer that a human dimension of the adolescents, *feelings*, had rarely, at most, ever been acknowledged as "real" by individuals in their environment. They no doubt found acceptance in other areas, for most of them seemed fairly healthy, if intellectually immature. The point is, however, that they were able to use a group experience to deal in a constructive way with concerns that were of immediate importance to them.

10. Family History Information

by Louise Collums

THE FOLLOWING is a discussion of information obtained from family members of individuals hospitalized for the psychotic deaf study at P&PI. The discussion broadly encompasses two major areas – factual information given by family members regarding the patient's developmental history, and impressions about total family life and some speculations about the emotional life of the patient's family. Emphasis is placed on assessing the effect of the individual's deafness on his own growth and development within the family context. The information will also emphasize any significant factors which led to the patient's developing a psychiatric illness.

It is emphasized at the outset that much of the discussion, and especially the conclusions drawn from information received, is speculative. Most of the family members interviewed were seen for one or two sessions. Detailed information and even honest expression of both facts and feelings are frequently impossible to obtain without a trust relationship built up over time. The same family members were not seen in every case. Sometimes the patient's mother or father was interviewed; at other times his spouse was seen; in some instances a sibling gave the information. In one instance a mother-in-law, who knew next to nothing about the patient's early life and family history, was the only person available. Thus, information was presented by people who viewed the patient differently because of their different kinds of relationships and involvements with him.

The fact that the patient required psychiatric hospitalization seemed to produce a predominantly guilty response from almost all informants. Real or imagined responsibility in contributing to the patient's hospitalization often produced difficulty too great to be overcome in a few interviews in discussing much about the patient's illness or history.

This is a situation no different from that of the involved family of a non-deaf person requiring psychiatric hospitalization. The stress of the hospitalization, the threat to individual functioning, and a perceived casual role frequently lead to difficulty in communicating more than facts and events about the patient's life immediately prior to hospitalization.

This is not to deny that many informants were very eager and willing to talk with the interviewer. At times the informant found a chance to talk with a helping person. In many instances there was a need to defend against the feeling stirred up by the hospitalization, especially anger at the person for causing difficulty and/or leaving the informant, and guilt at "being mad at a sick person". In many instances this reactivated unresolved similar, but deeper feelings about the person's deafness and was so great that even with support much exploration of fact and feeling often seemed difficult for the informants.

In some instances family members were unwilling to be interviewed. Most often, this occurred in instances where the patient had been discharged from the hospital before the interviewer contacted the family. It seemed that the wish for "cure" of the psychiatric illness which was not fulfilled by the hospitalization resulted in a considerable expression of anger towards the project and the hospital. To accuse the hospital of failure seemed a way of alleviating their own guilt. This displaced anger was often so great that family members refused to give information even over the phone.

In a number of instances family members could not be located, or when found, expressed so little concern for the patient that they were unwilling to be interviewed. There were a number of instances where patients, who had been institutionalized in a state hospital for a number of years, literally had no contact with their families during all that time and their families were not concerned in anyway discernible to the interviewer about the patient's situation.

Given these reservations, some observations about the patients and their families can be made.

From the reports of parents, it would seem that in most instances a hearing deficit was suspected in the patients around the ages of 2½ to 3 years. The most common reasons deafness was suspected were because the patient did not begin to talk or failed to respond to noises.

Generally, a close relative, frequently a grandparent, was first to notice or at least to verbalize the possibility of deafness, suggesting a need to deny such a possibility on the part of the parents.

Most often, six months to a year passed before parents acted on their suspicion, most frequently going first to a family doctor and from there to at least one ear specialist or to a hearing and speech clinic. When deafness was diagnosed, parents were told in most instances that there was nothing that could be done other than enroll the child in a special school when he reached kindergarten or school age. The professionals warned against manual communication usually because it would hinder the child's development of lip-reading and speech. Parents seemed consistently diligent in enrolling the children in special schools, either day or residential, at the appropriate time.

In terms of feeling reactions to the deafness, parents verbalized predictable and understandable responses of shock, dismay, and frequently, a concern that their children would not get a fair shake in the economic world. Generally, these responses were verbalized with little or no affect, suggesting perhaps that parents had developed ways of making the fact of the child's deafness less emotionally painful to themselves over the years.

Affect, especially anger, was most frequently evident in discussions of professionals in the areas of hearing and speech education. Parents most often verbalized a regret that they had never learned to communicate in sign language with their children and seemed to focus on this lack as a major contributor to difficulties in functioning and the need for psychiatric hospitalization. A number of parents, however, did not regret this lack and continued to communicate with their children through speech and lipreading, never learning sign language or fingerspelling.

It was the rare family where even one family member was able to communicate with the deaf member via sign language and/or fingerspelling. Most often this family member was a sibling, not a parent. Generally, a few "home gestures" comprised the total "verbally-expressed" communications between the deaf individual and the rest of his family. This naturally meant that the range and depth of manifest communication was mostly limited to questions about basic needs, commands, and directives. "If he absolutely couldn't understand me or me him, we'd write; but only as a last resort," was a typical comment. Yet most parents reported that they felt they understood their deaf child reasonably well.

It is suggested that they did understand much of what was communicated, but that very little was communicated. Feeling concerns, emotional needs, were not dealt with. The distance between the deaf individual and the rest of his family was great. Family members were not able to give details about the patient and his life. If he was obedient or unruly, this could be discussed. If he had friends, this was noted. But not why he might be either unruly or obedient, or what his friends were like.

Informants, parents, sibs, spouses, were able to detail events leading up to the patient's hospitalization. In most instances, if the actual precipitant was a visible trauma, such as a post-partum depression or an operation, this was verbalized as the reason. If the events leading up to the hospitalization were less clear, and only gradually became visible, then often explanations were absent. Visibly disturbed behaviors, such as rage attacks, were noticed, but a possible reason for them was not forthcoming, or at least was not verbalized.

Inevitably, however, at some point in the interviews, indications of the informant's feelings of responsibility and guilt would be mentioned but consistently denied in any exploration or any offer of support. Comments about the failure of the school system to suggest parents learn sign language were often followed by a nervous laugh and statement like, "Maybe we should have learned anyway."

"Maybe we should have done more to help him get a job," or "Maybe we helped him too much," were common responses which however, were most frequently not pursued.

The parents of a hospitalized 19-year old schizophrenic young man were seen collaboratively for over six months by the interviewer. They came regularly, and both would indicate, in one sentence, concern for their son and his situation but were unable to discuss it. Their anger at him for the difficulties he presented were denied. There was no wish to open up past wounds. Feelings of helplessness and self blame and anger were handled with a "what's the hospital done for my boy this week, is he better yet?" ritual.

There seemed to be ambivalence about the deaf person's role in the family as reflected in expectations. On the one hand, parents frequently said the child had to do household chores "just like the other; because to treat him differently would not have helped him. To make special exceptions for him wouldn't have solved anything. He had to learn to get along in a hearing world. To have cuddled him would have made him weak." But at the time of hospitalization parents of patients seemed more involved with the deaf patient than with their nondeaf children. They often got them jobs, took them places, arranged social events for them. In many instances it seemed as though realistic protection had become overprotection. This is not to deny the patient's role in many instances in perpetuating this.

It is suggested that the unresolved conflicts over the fact of the child's deafness, the anger and guilt, led to such highly ambivalent feelings about the child that they were unable to view him realistically as a human being with feelings, needs, and abilities, as well as some limitations. Parents were either overly involved with the adult patient or were almost totally absent in his life.

Given these observations, what conclusions can be drawn specifically relating to how the deafness and family constellation contributed to the patient's psychiatric illness? It seemed that most patients were referred when some kind of visible disturbance or disruption occurred – a young man began having rage attacks at home and became unmanageable, a woman ingested lye, an older man began tearing up his bed, a young man developed a phobia about leaving the house. Seldom were "non-disruptive" patients referred and hospitalized.

Does this mean that these non-referred non-disruptive deaf adults do not have psychiatric problems? Or, does it mean that help is not sought either by, or for, them until their difficulties become visible and unmanageable?

All deaf children and their families suffer many of the same serious traumas that necessitated some individuals having to be psychiatrically hospitalized. Why are some individuals and families better able to cope than others? A complex blend of individual character structure, both of the parents and the deaf individual, plus a family system that develops over time, plus life circumstance, as well as societal influences, all probably interact. To determine the relative importance of each aspect, in my opinion, can best be done by studying, over time, individuals and families.

11. Office Treatment of Private Deaf Patients

by David A. Rothstein, M.D.

NOTWITHSTANDING the value of research studies, pilot projects, community programs, etc., it remains a fact that a significant portion of psychiatric treatment of deaf patients will probably have to be done by psychiatrists who are in private practice. Or, to put it differently, since a large segment of medicine is still in the "private sector" and will probably remain so for some time to come, it should be worthwhile to make use of this resource in expanding services to the deaf.

In this respect it should prove worthwhile to educate psychiatrists in private practice, or residents who will be going into private practice, so that they will be able to treat deaf patients. In fact, it should be of value to do whatever possible to facilitate their entrance into the field.

It is in this way that individual, time-limited, research projects can probably have significant leverage in fostering increased services for the deaf in a magnitude greater than the services provided by the project itself. Workshops such as the 1968 Workshop for Psychiatrists and the Deaf (Edna Levine's) can serve to familiarize psychiatrists with the potential in the field and can probably even induce interest in some who had been previously uninvolved.

Unfortunately our hope of interesting the State of Illinois to take up where we left off and to set up a unit in the state hospital system for the treatment of deaf patients has not yet materialized. But my observations indicate that the project still has had an effect in seeding interest. Part of this comes, paradoxically, from the fact that the deaf patients at P&PI were mixed in with the hearing patients, paradoxical because we had expected that a separate unit for deaf patients would be more valuable.

This does not deny the value of a separate unit, but the presence of the deaf patients in the general psychiatric hospital population has exposed others to them as human beings, rather than as a different class of unknowable entities. The residents have been exposed, the other psychiatrists on the staff, the nursing staff, and even the other patients. All seem to me to have responded with a surprising but gratifying interest in learning about deafness and the deaf.

Since one source of hesitancy to become involved in the field is a lack of knowledge and a lack of confidence in the ability to function in the field, exposure to it and education about it are important facilitators. The intern or resident who comes on to a psychiatric service which includes deaf patients as an (almost) normally expected aspect will probably take it for granted that deaf patients can be treated, rather than taking it for granted that to try to do so would be strange, unusual, or frightening. This initial set is especially important in the field of deafness where the diminution of ordinary feedback can provoke in the therapist a feeling of unfamiliarity and anxiety. We need not worry that the intern or resident will take the deaf *patients* for granted, however, since therapeutic problems and management problems do exist and will demand his attention.

As I became involved with the project and gained some skill in treating deaf patients, I began to receive occasional referrals of deaf patients, including a few patients who had inquired about the project but could not be accepted in it, a few through people who had heard of my involvement in the field, and one patient who did not wish to continue as an outpatient with the project after her discharge from the hospital.

In that sense, if demand for services for the deaf grows, the private psychiatrist will probably have to familiarize himself with the field, because there will always be some patients who do not fit the criteria for one or another project and who will turn to him. In many ways I believe that another psychiatrist who was in private practice and I served as a sort of safety valve in certain cases where the project could not accept a patient and did not know what else to do. Some of my experience with these patients in private practice may be useful to relate.

First of all, it should be pointed out that the number of deaf patients I treated in private practice was rather small, and a private practice devoted exclusively to deaf patients would probably not be a viable venture. The psychiatrist should not expect, and should not be led to expect, that experience in treating deaf patients will make him a unique expert who will then receive all kinds of referrals of deaf patients because of his rare skill.

The psychiatrist who can communicate with the deaf, and who has experience treating them, is indeed fairly rare, or at least not common. But the deaf will not be beating a path to his door. In fact, even in our project, the relatively small demand for our services was surprising. In most of the situations in which I have been involved where psychiatric services were being provided on a cost-free basis, the waiting lists have been jammed. This was especially true where the service being provided was in some way specialized, like for children, where demand for services far exceeds resources available.

In the field of psychiatric treatment for the deaf, where services have been virtually nil, one would expect a small pilot project with limited resources to be swamped. This was simply not the case. It takes a while for a population to begin to utilize psychiatric services which have been previously unavailable to it.

What was true of the project itself, where financial considerations could not be a realistic deterrent or viable rationalization for the patient, is even more true in private practice. Although I referred to the "private sector" and "private practice" above, this needs to be qualified. There will probably need to be some sort of subsidy involved. Possibly private insurance can be of assistance – if it were to cover office psychotherapy, if the patient had thought of obtaining it or if it were provided through his place of employment, employer, union, etc. But most probably it will end up that some form of government assistance will be required, such as from the Division of Vocational Rehabilitation.

On a realistic basis, there are financial problems for most deaf people. They are frequently underemployed and the costs of private psychotherapy may be prohibitive for them. But there are also unrealistic factors, some of which seem to be related to the way the deaf view themselves (and are viewed by others). Perhaps as a result of a realistic need for assistance in such a basic, intimate, elementary function as communication, it seems to me that the deaf, in general though not in all specific instances, tend to see themselves as needing and deserving assistance and thus expect it. We, who speak to and hear each other so easily may not fully realize what it is like to need assistance in that function, to need a mediating interpreter. Admittedly, one may find a similar situation when needing an interpreter in a foreign country, but the more critical need of the deaf for assistance in communicating is probably more analogous to how a person might feel if he constantly needed assistance in thinking (without getting into the question of the relationship of speech to thought). As I will attempt to illustrate below with the case of one patient, I believe that the deaf also do not fully appreciate how much easier it is for hearing persons to communicate.

In view of this tendency, many, perhaps most, deaf expect assistance and do not see themselves as paying for treatment (wholly aside from whether they can or cannot). There also may often be some feeling, as with others who have been unfairly treated by life, that something is owed to them (and perhaps it is more superficial than the deeper underlying set of seeing themselves as people who need assistance). In the hospital project, as Dr. Easton comments, the deaf patients seemed to be less able to initiate steps of independence, and it seemed to be indicated, more so than with hearing patients of comparable degrees of illness, for the therapist to be of concrete assistance, sometimes accompanying the patient.

Apparently a similar situation applies even in well functioning deaf persons who may often feel the need for a hearing relative or friend to accompany them to a job interview, to make application to college, to go to the doctor, etc.

I see this same problem as existing in the failure of our attempts to get the deaf community or its organizations deeply involved in the project. At several points I had suggested the possibility of a deaf organization making funds available for small amounts of spending money for the patients. Not much headway was made in exploring the possibilities of the deaf community participating in post-hospital needs of the patients.

I would hasten to add that this feeling of need for assistance is not total or universal – witness the deaf community's previous objection to an extra income tax exemption (which could, of course, be attributed to reaction formation, but it is important. The need for some form of financial assistance, even in the light of the unrealistic aspects, should not be assumed to show a lack of "motivation for treatment."

In the material below, I will summarize certain aspects of the treatment of two deaf patients whom I have seen for a long enough period of time to get a reasonable idea of what is going on in the treatment, followed by some material concerning a third patient which I believe illustrates subjective experience in a unique way. I will make no attempt to exhaustively present all aspects of the therapy, but will focus on those aspects which I feel have some general applicability to psychotherapy with deaf patients. I would point out that my bias is such that I feel that patients and non-patients are not so different that insight gained from dealing with patients would be inapplicable to understanding non-patients.

Thus, I believe that these aspects which I will illustrate can be applied to gain a better understanding of the deaf in general, which would also help us gain a better understanding of the hearing.

I am basically in agreement with Dr. Grinker's idea of following the medical model of letting an understanding of pathological functioning guide us to a better understanding of normal functioning, thus attempting to gain an understanding of disturbed deaf people which would also help us understand the effect of deafness, even in deaf people who were functioning well.

However, I did have some disagreement with the degree of disturbance we were beginning with, feeling that such seriously ill, hospitalized, psychotic deaf patients would confuse us in our attempts to distinguish what was a result of the illness and what was the result of the deafness; that it would be better to begin with less disturbed individuals, such as the two I will describe below.

Even though one of these patients had been hospitalized on the deaf project, up to that point she was one of the healthier patients we had seen and, of course, after the hospitalization, at the time of treating her in the office, she had reached a better level of functioning than was seen in most of the patients while in the hospital. Thus, this section, in effect, can be viewed as complementary to the other sections dealing with the hospital patients.

I will focus primarily on what I feel are two crucial issues. The two issues are, perhaps, so closely interrelated as to be almost two sides of the same coin.

The first is the need to mourn the loss of hearing, a need which seems to be almost universally unmet, even in reasonably successful well-functioning deaf individuals. One frequently hears (or reads) the comment "my deafness doesn't bother me" from normal deaf people. I do not believe it even then, but since it is none of my business to tell someone who has not asked my help that he ought to mourn his loss of a function; I let sleeping dogs lie.

I do not know for sure that such individuals would feel any better or operate any better or that they would derive enough personal gain to compensate them for the painful process of mourning. But it seems apparent that a substantial number of patients are being held back by inability, or the lack of opportunity, to mourn this loss, to work it through and go on from there. A primary function of psychotherapy for the deaf can be to assist and encourage this process, providing the patient is healthy enough to undertake this task. This is especially true because so many of the other individuals in the patient's life have denied the disability, or have attempted to cheer up the patient and to give him hope and encouragement, unfortunately in such a way that they helped to abort the mourning process. It must be admitted that a good many deaf people have achieved a significant measure of success in this way, but at great cost in terms of personality development and maturity. It is certainly worth considering the possibility that a greater awareness of the need to mourn the loss, even on the part of more successful deaf persons, and on the part of the deaf person's family and teachers, would contribute a good deal to the deaf population as a whole, even if it didn't to every individual deaf person.

The second issue can be considered to be the cognitive side of what is represented affectively in mourning. In other words, it is the issue of understanding exactly what it is that the deaf person is missing. He is certainly not just missing the pleasure of hearing sound. There is disagreement on whether he is missing something necessary to thought. But in treating deaf people it becomes forcefully apparent that they are missing one of the most elementary functions necessary to rapid, but comprehensive, complete, yet facile, interpersonal communication – and often they don't really know it.

At first I didn't know it either. When I would go to a social gathering of deaf people and see them communicating manually with each other with great skill, I felt as if I were the person with the disability, and it appeared as if the deaf people were conversing with each other just like hearing people – only manually. At the present time, however, I do not believe that to be the case. Especially when communicating with a hearing person (but even in communicating with another deaf person) whether by speech reading (lipreading) or by manual communication, the deaf persons' conversation is either superficial, impoverished, and limited in complexity, or else it lacks facility and ease of rapid interchange and feedback. It is either limited in content or it becomes ponderous and clumsy. This type of conversation requires much more effort and thought to communicate a given amount of information than does speech and hearing. The observation that this is the case even between two skilled deaf communicators is open to modification, but it seems to be a valid observation at this point, and it is almost certainly the case in transactions between the deaf and the hearing. The deaf person not only misses out in interpersonal communication with his mother as an infant, he is still missing much in his daily life as an adult.

Patient 1

This young man became deaf at age six as a result of meningitis. He speaks rather well and is fairly easily understood and he reads lips well. He indicated that he preferred to communicate by speaking and lip reading. There were apparent difficulties in communication when conversation became complex or deviated from the predictable. In such instances he seemed to prefer not to use any fingerspelling or sign language even for clarification, but if it became necessary, would on occasion, allow me to fingerspell words, although he would first ask me to open my mouth wider.

It seemed that his efforts to keep up an appearance of a smooth conversation must have been quite frustrating to him because of the frequent misunderstandings, misreadings of lips, etc. This would of necessity occur due to the inherent percentage of ambiguity in speech reading, and his disinclination to use manual communication or writing even to clarify. This seemed to be true in his communication with family members, co-workers, and with me.

Moreover, it was frustrating to the hearing person involved, such as myself. Dr. Vernon had some contact with him and commented on his own similar reaction. It appeared that the patient had an internal linguistic ability based upon his having heard until age six. This led him to want to communicate in a rather complex way which was rendered particularly difficult by his insistence on avoiding manual communication or writing, but which would have been difficult in any event.

The patient's presenting complaint was difficulty with his wife and dissatisfaction with the marriage. This was his second marriage, the first marriage having ended after a very short time as a result of problems which seemed quite similar. The current marriage lasted several years, and they had one child at the time therapy began. The wife had apparently just become pregnant again, and they had a second child during the first year of therapy.

He and his wife argued quite a bit – about their apartment, about his mother-in-law, about finances, about sex, and other issues. He seemed to feel that his wife preferred her dog to him and even to their child. He felt she paid undue attention to her mother's advice, was demanding of him in terms of financial achievement, and was not giving to him. He indicated some fear of losing his temper and doing possible injury to his wife.

He has a college degree and works as an architect. He felt that his wife had less education and therefore tended to be capable of only superficial conversation. She is hard of hearing and wears a hearing aid. From his description it seemed that her hearing loss was perhaps more profound than this.

The patient immediately indicated a strong wish for contact and support in the therapy. Although he seemed to want support in handling his angry feelings, he did not talk as much about his angry feelings as about the presumed faults in his wife which made him angry. At first he pictured the family situation as two hostile sides, with himself, his mother and sisters on one side, and his wife and her mother on the other. He later began to express some of his ambivalent feelings about his mother and sisters. It was at this point that he seemed to begin to project less of the problem on to his wife and talked more about himself, including his feelings about being deaf. Concomitantly, he began to discuss his feelings about his job, his feeling that he was somewhat underemployed, and his feeling about communicating with his co-workers and his supervisors.

It did seem that his wife was attempting to deny her own deafness, preferring instead to keep up a superficial appearance of communication. I encouraged him to be more insistent upon clear communication with her, even if necessary, to write and also to persist in efforts to communicate with others on the job.

Although he complained that his wife wanted him to do everthing her way, he did not seem to prefer to do things differently. We clarified that he was upset at the inability to discuss what they would do with his wife, rather than the concrete question of who wanted to do what. It was also possible to clarify to him that many times when his wife asked unrealistic questions or made demands she was really asking for emotional support and attention. He gradually began to express his feelings of rejection which resulted when his mother avoided conversation with him and when co-workers or supervisors avoided conversation, or when others did not seem overly enthusiastic about making the telephone calls for him, etc.

I pointed out to him that is was indeed more difficult for a hearing person to communicate with a deaf person than for two hearing people to communicate, and that a family member or co-worker might feel reluctant to put forth the extra effort. When he responded that thev should realize that it was also hard for him, I told him that that did not count. The fact that it was hard on him did not make it easier for the hearing person – it was still harder for the hearing person to talk with him than with another hearing person.

When he asked if it was harder for me to talk with him than another hearing person, I agreed. At one point I gave him the example that we had been talking for 20 minutes. He seemed to be impressed by that. When he asked me whether I thought two deaf people would have more difficulty conversing than two hearing people, I had to think about it, and then said I thought so. Thinking about it later led me to the conclusion stated above, changing my earlier impression about the facility of communication among the deaf.

This point in the therapy seemed to mark the beginning of what might be considered a sort of mourning process for his hearing loss. I had already formulated this therapeutic direction on the basis of our earlier discussions in the project and my earlier experiences with deaf patients. It also seemed to mark the beginning of refinement of the congnitive conceptualization of the deafness disability for him, and for me, because it helped to clarify my own ability to conceptualize what the deaf individual must experience. (This is, of course, not to say that either of us had any idea of what deafness was like.)

I believe that my admission to him that it was an effort to communicate with him helped to clarify that hearing people were not rejecting him as a person, though they might become impatient with his deafness. I suspect that his parents, in an effort to deny feelings about the deafness, probably did not openly admit this impatience. Therefore when he sensed the impatience, he was confused as to its meaning.

On occasion I would write out a comment to him. I will quote some of these and note his reactions. These notes sort of follow the course of the therapy (which was on a once a week basis).

Third week: "You describe the problem as being due to the way your wife acts, immature, etc. A psychiatrist who treats you cannot be changing your wife that way. Do you have any thoughts how therapy can help by treating you?"

He said psychotherapy might help him with his own reactions. He said that he signs when he is angry. He felt that the fact that he can get as angry as he does meant that his wife is not his only problem. The following week he complained that his wife acts like he is her obstetrician – asking him questions, complaining to him – then forgetting to ask her obstetrician about the matter and again asking him. I suggested that she might be wanting the feeling of being able to rely on, or lean on him, wanting reassurance of love from him, and asking for it indirectly in this way – and that he wanted similar reassurance from her. He agreed. The following week he brought up his feeling of being left out of conversations with family members, such as his mother and sister.

Fifteenth session: He brought up the issue of communication, which we discussed further. I wrote: "There are limitations to communication without hearing – no matter how hard one tries. We have found that many deaf people overlook this and try harder and harder. I think it is important to remember that no matter how hard you try, there are some limits and it won't be as easy as two hearing people talking. That is an unfortunate thing – but it is better to realize it than to try the impossible."

It had been growing increasingly apparent that he was imbued with a fantasy that if he just tried hard enough, or maybe if he would just be good enough, he would hear, or at least he would communicate so well that it would not matter whether or not he heard. It would be as if he heard, and that if this did not result, it would somehow be his fault. I think this fantasy is held out to many parents of deaf children and to the children. It no doubt does help to spur them on to phenomenal efforts and often results in a good deal of language learning, even in prelingually deaf children.

Considering the astounding effort it takes to overcome the obstacles to linguistic skill which deafness imposes, some such spur may be necessary. But it must be recognized that if such a prodigious force is required to spur the human mind on to achievements at the very limit of its capacity to perform, there will be side effects.

I cannot believe that it is beneficial to leave the person with the impression that he will, by his efforts, become able to hear. Perhaps I am over concretizing by saying the fantasy is that he will become able to *hear.* However, to believe that he will become able to communicate *just as well as if he did hear* is equivalent. It seems to me, as I mentioned above, that most deaf people, and in particular this patient, do not fully appreciate the ease and facility with which hearing people communicate. I would venture to speculate that in terms of the ease, facility, and rapidity with which complex ideas can be communicated, spoken and heard, conversation is as much an improvement over deaf communication as transmission of thought by telepathy would be over speaking or writing.

In the following session the patient said it might be better to let himself get angry when people do not understand him or ignore him. He talked about his wish to talk with his wife before work since he cannot telephone her from work. In the following session he speculated about the unsolvability of his communication problem.

> "the communication limitations from deafness are insoluble –"
>
> "that is not the same as saying there is nothing which can be done –"
>
> "the problem of trying to communicate just as well and easily as a hearing person *is* insoluble –"
>
> "the problem of living with deafness and being able to have a rewarding enjoyable life is NOT insoluble."

In the 20 sessions since then he has been working on it.

Patient 2

This second patient is an unmarried lady of late middle age. She attended public school to age 18 and worked at various jobs since then, most recently doing general office work in a family owned business. She lives with her mother. The father is deceased. When she was first seen for psychological testing by Dr. Vernon, in connection with application to the project, she expressed concern over continual nervousness and fear of being alone. These symptoms first became pronounced when her mother suffered what the patient described as "a heart attack."

Dr. Vernon noted that she expressed a life long bitterness over her educational failure to learn to speak, lip read, and to read better. He noted that the family placed great emphasis on these skills and on her achievements which, although good to satisfactory for a congenitally deaf person, were perceived by her and her family as failures. She also seemed to feel frustrated with the menial nature of her job. Dr. Vernon noted that family ties were close, but that the family seemed to have less than a full understanding of the significance of her accomplishments in the face of the handicap of deafness.

It was felt that she was reacting to the threatened loss of her mother and the absence of her family (who were on vacation at the time), that psychotherapy was indicated to prevent further disintegration, and that she needed help in preparing for the eventual death of her mother.

Although Dr. Vernon questioned whether hospitalization might encourage regressive and dependent tendencies and felt that psychotherapy might be better done on an outpatient basis, nevertheless, the staff members involved in making the decision did decide to hospitalize her on the project.

Unfortunately it was also decided to go along with her denial of the need for psychotherapy. Her rationalization that she was only in the hospital for a very short time for "a rest" was explicitly encouraged. As it turned out, her hospitalization, though not really long term, was nevertheless longer than she had been led to believe. She became distrustful of the staff, and as discharge approached, she did not wish to continue with the same therapist as an outpatient. I had had no contact with her case, the therapist having been supervised by a different psychiatrist. Therefore it was suggested that she continue treatment on a private basis with me (as a DVR patient).

I saw the patient for the first time shortly before her discharge, and then later saw her in my office for weekly sessions. Manual communication has been the primary mode, although she utilized fingerspelling to a larger extent than sign language. This has been satisfactory for me, because I find the fingerspelling which follows spoken English easier to remember than all of the ideographic signs and often forget a sign and have to substitute a spelled-out word.

The fact that she was educated by the "oral" method and did not learn manual communication until late adolescence or early adulthood probably explains her tendency toward fingerspelling. She also speaks and watches lips while communicating, although it seems as if this alone would not be adequate. Nevertheless, that seems to be the major mode of communication with the family, except for a young niece who has learned manual communication.

The patient's primary overt complaint during the time that I have been seeing her has been a well-fixed paranoid delusion that the people at work play tricks on her and laugh at her, that her mother, sister, niece, and probably me as well know about it, but keep it secret, and that her family and Dr. Vernon tricked her into going into the hospital for some unspecified reason.

As might be expected, there did seem to be "kernels of reality" to her delusions. I focused on what I felt might be specifically behind the delusions. For example, I agreed with her that to let her rationalize that she was going into the hospital only for a rest was misleading. However, since she had no reason for anyone tricking her into this, I pointed out what I felt to be the reality: that her family and the staff had probably been afraid to confront her with the true reason by pointing out her disturbance.

It is, indeed, easy to see why anyone would feel disinclined to force a confrontation with her, judging by her vehement defense of her delusions if I so much as indicate even slight skepticism. This is, of course, not unusual with hearing paranoid patients either. It is also not atypical of paranoid patients that while maintaining the validity of her delusions, she will accept an alternative explanation or a simultaneous statement of her illness which actually contradicts the delusion.

For example, she later met Dr. Vernon at a social function for the deaf. Dr. Vernon told me she acted quite appropriately, although distant. However, she indicated to me that she only greeted him, and then avoided him, because she felt afraid of him, afraid that he might "play tricks" on her.

It seemed as if she were coming out with feelings about the "tricks," especially as she looked angry, and her vocalizations sounded angry. I pointed this out. She looked thoughtful; she agreed; and she calmed down.

At another time she had begun to complain about "tricks" at the office after a period of relative calm which had followed my prescribing medication for her. On inquiry, it developed that she had discontinued the medication a short while before. While she insisted upon the actuality of the "tricks," she also accepted my statement that she was probably more upset because she was not taking the medication, and she agreed to start it again.

In another session, after I had been away a week, her delusions and her agitation about them increased. In fact she almost always reacted to a break, or threatened break, in the continuity of the therapy by an increase in the delusions, accompanied by increased agitation. When I suggested that her increased upset was due to my absence for a week, she agreed.

However she did not seem to see it as a contradiction to her previous statement that the people at work had caused her to be upset.

At a much later time she repeated an earlier contention that her niece had worked in her office (which was true) in order to spy on her (which did not seem to be true); that her niece had, in fact, gone to college for several years in order to learn psychology to "spy" on her and to make contact with professors to railroad the patient in the hospital (I believe the niece did get referred to the project via someone at her college).

I told her that her niece was a young woman with her own life to lead, that her life probably did not center around the patient, and that compassionate though she might be, she was not likely to use up several years of her life going to college and working in the summer just to spy on the patient.

I asked whether she would have been that interested in any aunt when she was young. I said I thought the patient felt badly about growing older, feared the loss of her mother, was lonely, especially since she had never married (all topics we had discussed before), and wished that her niece were that totally interested and involved with her.

The patient looked surprised, then thoughtful, and said she thought I was right. Yet I am quite sure that had I next asked whether this helped her realize that her niece was not spying on her, she would have told me her niece was spying on her, and recognized no contradiction between that assertion and her agreement that she only wished the niece were that interested. (Actually the niece does seem to be quite interested in realistically helping the patient).

Now it would be naive to say that any of the items just described occur exclusively in treating deaf patients. After all many paranoid patients can insist on the accuracy of their delusions, yet discuss other areas quite rationally, can insist that they are not "imagining things," yet cooperate in taking medication to control delusions, can express ambivalence, etc.

That is why I say these things are not entirely atypical. But there does seem to be a particular quality to this in the deaf. As I have, commented on elsewhere, there seems to be a striking lack of awareness of contradictions, so that two mutually exclusive assertions can both be held by the deaf person to be true without any noticeable discomfort.

Somehow the implications of the one assertion do not carry over to the other. It also shows up in a certain inability to handle contingent statements or "if-then" propositions. The elements from the "if" part do not carry over to the "then" part. I believe this is also related to the consequent need for fairly concrete examples. I would say that the fairly concrete example that the patient would not have gone to college to learn to spy on an aunt may have helped to get the message across.

On another occasion, the family was upset because of the patient's behavior at work. She had roped off her desk and put up a sign reading "Do not enter." When she discussed it, I suggested that it was not appropriate to rope off her desk. She told me it was a string. She could not understand why that would be considered unusual. Finally I told her to suppose she came into my office and saw that I had a string up with a sign attached saying "Do not enter." Wouldn't she then think, "Dr. Rothstein is crazy!" She laughed and agreed.

There were other kernels of reality to her delusions. It seemed that the family kept up the facade to her that they are hiring her just like any other employee, whereas, in fact, they are doing it as an indirect form of support for her and her mother.

Thus she may perceive a certain lack of candor which could add support to her feeling that something is going on behind her back. The family has also not been entirely open with each other about illnesses of certain members. In a recent case, her mother played down the seriousness of a relative's illness until the patient pursued the matter. The patient said her mother usually keeps things a secret the first time and only tells her the real story after the second time. This can help support her feeling that if she asks her family often enough about the "tricks" in the office, sooner or later they will give her the "real scoop."

Another delusion concerns a feeling that people are saying she is a man. This may have to do with the paranoid dynamics involving sexual identity, homosexual conflicts, the fact that she is unmarried, etc. It also brings up another issue which seems particularly prominent in deaf patients – an actual, factual, cognitive lack of sexual information.

Just as the simultaneous assertion of contradictions seems to be qualitatively different than expressions of ambivalence in hearing patients, so does this "sexual information gap" seem to be different than, say, a hysterical repression of sexual knowledge in a hearing patient.

Of course, such repression may play some part in the deaf patient's naivete, but there seems an additional distinct lack of knowledge. This is not really surprising when one considers that the channels for input of information to deaf children and adolescents are severely limited, so there is also far less exposure to the casual, informal gathering of sexual information that occurs with hearing children. I have seen on a short term basis a number of young adult and adolescent deaf patients with whom a direct factual discussion of sexual information seemed to be of benefit. Deaf children do not learn language of their own in the same informal way hearing children do. Instead, a formal conscious effort has to be made to teach language. So, perhaps they also do not gain sexual information in the same informal way, and there is not the same formal conscious effort to teach it.

Early in the therapy with this patient sex was a topic, especially in the context of her not having married, not having known how to comfortably meet boys socially, etc. She had become upset after seeing the movie, "The Graduate." She said she doesn't understand about sex. She said sex is a complicated subject. The question of her fear of losing her femininity as she grows older was also discussed.

On a social level, she seemed not to have learned how to participate in a good natured, give and take joking or teasing, and it seemed that she perceived such interchanges only in terms of the hostility involved, which made it harder to initiate new relationships and probably also had to do with her delusions. If someone would tease her jokingly, she would feel that person was "playing a trick" on her.

In addition to fearing loss of her femininity as she grows older, she seemed to fear losing her ability to speak. Especially, she was concerned at a decrease in conversation with her mother. At first it seemed that her concern had some basis in her own linguistic ability, and the possibility of some continuing education was considered. Later it became clearer that this was based instead on her fear of losing her mother, whose illness seemed to have precipitated the symptoms originally.

It appeared that with advancing age her mother was losing her hearing, and that, after a lifetime of denying the patient's disability she was now denying her own. The patient was not becoming unable to talk to her mother. Her mother was becoming unable to hear her. In view of the patient's speech quality, any auditory understanding of her speech could only be precarious, as would any impairment in the listener's hearing. I suggested to the patient that her mother look into the possibility of getting a hearing aid and a special telephone, which she did.

It also appeared that the patient was expressing a good deal of hostility toward her mother by complaining of her symptoms to her. Early in the therapy I received calls from the mother and sister expressing concern about these angry outbursts. I encouraged them to take the affect (anger) seriously and to realize that after years of being a "good girl" (too good according to the sister), she was expressing angry feelings, and that it was not going to hurt the family to get yelled at a little. As they became a bit more able to tolerate it, there were fewer outbursts.

One thing at which the patient seemed angry was her mother's denial of the disability of deafness and her concentration on appearances of normal hearing by refusing to learn sign language because then people would notice she had a deaf daughter.

The impoverished nature of the patient's usual communicative transactions was illustrated one day when she complained about a form she had had to fill out at work. She felt her supervisor was "playing tricks" on her when she claimed the form was filled in wrong. The patient could not understand what was wrong, and apparently the supervisor could not explain it to her. I asked to see the form, tried to puzzle out a possible explanation and discussed it with the patient. Suddenly she saw that there was a potentially rational explanation and became much relieved.

This led her to tell me about her school experiences, how she had wanted to learn more math, English, and reading, but the teachers said she had to learn to speak better first. She said they paid more attention to her voice than her mind, more attention to her speech than to her thinking. She said until recently she had never told her mother how much she had resented her teachers.

The patient is by no means "cured" yet, and the question remains as to how she will fare when her mother does finally die. In fact there is still some question of whether she will continue to need the support of therapy, or whether enough gains can be made to continue without it. Nevertheless, in contrast to her response to her mother's earlier illness (which apparently had precipitated the symptoms), she recently weathered a fairly long period of time when her mother was hospitalized and her sister was out of town.

Patient 3

This patient is a young man with profound hearing loss since birth. He saw involved in a Jewish Vocational Service (JVS) workshop program and had been referred for a diagnostic evaluation by DVR. When therapy was begun, however, it was done on a private basis, because the family's financial situation put him out of the range for which DVR could provide services.

The patient's father and brothers have been quite successful in their fields. His mother had died about ten year earlier.

The patient had had some psychotherapy some time ago, in what was described as a "pioneering attempt", in view of the lack of psychiatrists who had had experience with deaf patients. In contrast to the situation with so many of the deaf patients we have seen, whose families made little or no effort to learn sign language, this patient reportedly taught his family fingerspelling so that they could communicate with him.

On the other hand, his mother apparently made extreme efforts to tutor him in English (mainly reading and writing, but possibly also speech), and, as he describes it, became quite frustrated. His description indicates that she, too, may have had a fantasied expectation that he could somehow be taught to hear – or at least be taught the same degree of linguistic facility possessed by a hearing person – and that she became quite frustrated when this did not result. He greatly resented her tutoring.

The patient has been quite interested in art, especially in drawing cartoons. Apparently he did not have much commercial success with his art. He, himself, recognized that one problem with his cartoons is the lack of idiomatic English in the captions, since his English is more typical of the idiom of prelingually deaf individuals. He had, in fact, not been very successful occupationally at all, and was at the time of referral involved in a JVS workshop.

In my diagnostic report I took a dim view of the JVS workshop. The referral information had already pointed out that work he might do would seem a puny success compared with his father and brothers. The father had enough money so that the patient did not have to work for a living, but the father felt he should work so that he could earn money in case it ever were needed. It also seemed to be an implicit assumption of the father and JVS that somehow a job would be good for him.

I wondered if it was really necessary for him to work and raised the question of why he should work. There had seemed to be some concern that his art work was not saleable and that he could not earn a living from it. This seemed irrelevant, since he did not need to make a living from it. I did not think it made sense for him to be in the workship. I agreed that the simple, clerical work, or stockwork he might learn there would seems a puny accomplishment compared to his father's or brothers' successes. Although the comparisons are not accurate, I could just picture someone sending Gauguin to a JVS workshop to learn clerical work because he could not make a living from his art, or sending Nelson Rockefeller to a JVS workshop so he could learn a job and not have to depend on his family's money while he fooled around with politics.

I pointed out that the patient was in the enviable position of being in a family well enough off financially so that he could pursue his own individual, artistic interests even if they did not lead to financial success. Shortly after therapy began, the father arranged to hire him in his own office.

Although the patient does know sign language, he indicated that he preferred to communicate in writing. A quote from the first session reveals his point in a way which one must admire. I had asked him (with fingerspelling and sign language) how he preferred to communicate, and whether he knew sign language.

After indicating that he wished to write, and showing me that I should use a black and he would use a red pen, his first written comment was: "Know a little or more of sign language." I then asked him:

Do you prefer to lip-read
or use sign language
or use fingerspelling
or write on paper
which?

His response was: "To use only written communicative dialogue means that I want to understand what you say."

From my experience with our research in treating the deaf and the incidental communication with other deaf individuals; from my impressions when observing those deaf individuals who insist on using speech reading exclusively, from observing the almost saintly patience which seems to be necessary for a deaf individual to communicate with those of us who have learned manual communication only lately, and from observing the obvious lacks in communication which exist even among skilled manual communicators and speech readers; I had to admire a deaf person who said he uses written communication when he really wants to understand what is being said. This is in spite of the obvious disadvantages which would exist in holding psychotherapy sessions in writing, most notably a diminished spontaneity and increased distance.

Actually, although his writing lacks proper idiomatic expression, he does have a reasonably good command of language. In reading it, it may seem bizarre to one unfamiliar with the deaf. It might shock a parent of a deaf child to think that this is a significant degree of linguistic ability for a congenitally deaf individual and that his child would learn language better only in exceptional instances. However, I think it is fair to say that this patient's grammar, syntax and idiom are reasonably typical of "deaf speech" or "deaf writing."

In fact, it would not be too far wrong to say that most of his writing when translated into sign language would be essentially indistinguishable from a sign language translation of grammatical idiomatic English. In other words, the distinctions between his English and the correct speech of a hearing person, would probably be blurred or even lost in the translation to sign language. One soon gets used to the odd language structure and does not notice it too much.

I will give a few examples from the sessions which I feel illustrate how his comments give a very good picture of the internal, subjective, phenomenological experience of a deaf person. I am not particularly focusing on anything pathological.

He told me of his mother's death.

D.R. (therapist): How did you react when your mother died? How did you take it?

P. (patient): I did not feel mourning for her for the possibliity that she had treating me as a deaf-child so hard the more she was despised my deafness the less she loved me if I would be a normal child. My education could not take a step up due to a discouragenousness from a "wild-cat" temper of my mother. I gave wrong answer to her during the arithmetic lesson and reading lesson, she losed her temper . . . I hated the summer tutoring.

At another time he said:

P: I was sick of being threaten by a berserking mother. to my relief she gave up a tutoring.

D.R.: I think you probably felt that she didn't love you because she didn't like your deafness.

P: She thought it was bad thing to gave a birth to the deaf child.

Another time he said that she was "stern" when she tutored him, but:

P: I wanted her to be a wonderful and gentle mother with a very good wits (not a sharp-tongue wit)

He described his experience in trying to read lips:

P: As a little boy, I tried to read a lip but the lips move so fast if I could not read so fast no matter I could not read fast. My brain could not help me to recognized every phonetic words and I could not use a memory to know every phonetic words or sign language. Last summer I was taught on the sign language except half of the memory I use on this; other I forget in half. My memory is not good to help me to be communicative in three things; sign language, misunderstanding every spoken words; and lip-reading.

He later discussed missing the sound on TV, in movies, plays and the opera.

D.R.: Do you wish that you were notdeaf? When you watch a play or opera, does it make you wish that you could hear the words or music?

P: Yes, I have feeling for what I'm try to be sensitive. I'm hungry for communication. Being deaf makes me felt lonesome. I want communication that means I want a friend.

D.R.: I think that is true. Being deaf causes problems of loneliness because many hearing people are too impatient to try to communicate with deaf people.

P: 'Tis agreeing.

He later told how he felt left out of family life, especially as he went to a residential school.

D.R.: That does happen with many deaf people and can make you feel lonely.

P: That's right – This is why I told you that I was trying to be sensitive for life for not be deaf. I tried, but I'm still being a deaf. It is not good.

D.R.: It is not good to be deaf.

P: Right.

From time to time we discussed his cartoons. At one point I asked him if we could include some in this research paper. He agreed and gave them to me to have them copied. An excerpt of some of the later discussion follows. He asked if the purpose would be "personality analysis".

D.R.: It would be partly personality analysis because the cartoons would show something about your personality. But partly, I believe, they also show more generally some insight into deaf people. For example, you don't get so much chance to have conversation in speech, but I believe you draw and write some of the things you might say in speech if you were not deaf. Do you think so?

P: I think only deafman's lingo but this is my own lingo-slangless, and poor grammar. And I talked a little or simple in speech more than I wrote a longer or general but poor in standard. I lives in this world alone beyond normal-hearing man's world. I pictured myself in a meadow with the trees under a sun with a warm golden rays above while I stood beyond the ugly brick walls as a symbol of hearing man's world. This is my own idea is what I tell you.

12. Studies on the Deaf Child

by Eugene Mindel, M.D.

AN IMPORTANT consideration in understanding the deaf child's position in a hearing family is his vulnerability for becoming the focus for conflicts within the family, conflicts which are not of his creation. Chronic and current conflicts within a family contributing obvious stress, coalesce around family members.

The deaf child, of course, is not unique among handicapped children in his role as catalyst of family conflict. Children with emotional handicaps are a special and somewhat more complicated group, because with some exception (primary autistic children for example), the emotional handicaps usually reflect the family dynamics. Conflict is created because the child mirrors some unacceptable aspects of the parents' individual personalities.

The deaf child, by virtue of his handicap, is forced into a position of greater dependency on his parents. The parent must negotiate for him in many more situations than is the case for the normally hearing child. The deaf child is not so free to express his preference, other than by crude affirmation or refusal. The dependent relationship continues longer; much of it is transferred onto school personnel, especially in the case of the children sent to residential schools.

Because he has limited ability to communicate feelings and ideas to the environment, the deaf child provides a ready object for the projection of his parents' feelings and attitudes. The deaf child is easily assigned the adult's motivational scheme. The primitive drives which are appropriately expressed by the child, may be found unacceptable in himself by the parent. This can lead to the child being the recipient of the adult's rage.

Of great relevance is the character of the family communication patterns. The stress of a sick or disabled child always strains the communications framework of the family. In some families it was found that the parents did not discuss their fears that their infant could not hear. If the family already has strains one parent would be less prone to introduce material which would stir up the marital partner.

Parental differences in reacting to a deaf child can arise as a consequence of basic differences in unconscious sexual conflicts. Many difficulties that arise in a marriage derive from characterological patterns, or patterns of coping that operate with a high degree of automaticity in each parent. If there are noncomplementary coping patterns, these can lead to conflict in the parents.

The other area open for the creation of conflicts in the marriage is the nature of the ties to the grandparents. Because the deaf child adds ongoing stress to the home through the everyday difficulties in coping with communication problems and stirs up conflicts in the parents around their own dependency conflicts, differences between parents can become accentuated. This is related to the empirically observed increase in the divorce rate.

A basic difference in attitudes towards deaf children has been found to exist on the basis of sex of the parents. Since deafness is viewed unconsciously as any bodily injury, parental attitudes will differ. Male parents seem to be most threatened by having a deaf son. It is harder for them to accept any method of communication which makes the child appear more disadvantaged.

Concerns about making a living and bearing children are conscious and available for discussion. No known clinical psychoanalytic data from the parent of a deaf child is available. If the above hypothesis is correct, one could predict that divorces would be most frequent in families where there are deaf sons; the highest frequency would be deaf sons as only children; then deaf sons as first children and deaf sons as the only sons. This is correlated with divorce rate because the incidence of divorce is partially predicted upon a family's inability to resolve basic psychological differences that must be articulated but generally are not because they are tied to unconscious issues not freely voiced by parents to each other.

Since castration anxiety is not a basic problem for the mothers in the same manner as it is for fathers, one would expect that girl children would not lead to the same anxieties in the mothers and certainly not so much in the fathers. Therefore, the divorce rate should be lower in families with deaf daughters.

It is well known that after parents discover deafness in their child, they develop feelings of guilt. This derives from several sources. If they have misinterpreted the child's deafness and attributed it to something like "stubbornness," and the child has been punished for it, guilt can develop.

Frequently parents report that if they had known of the deafness sooner, they could have done something about it. This consideration is relevant after the age of one year. Even then, however, the results of early auditory training are equivocal. The importance placed on early amplification by some audiologists can intensify parental guilt. *Parents should be protected against developing beliefs that early intervention can accomplish the task of having their child, especially a profoundly deaf child, function as a normal child.*

After the discovery of the deafness, the parents may attempt to assuage their guilt through over-compensation, more commonly referred to as "spoiling." Whether or not to treat the deaf child like a "normal child," or give him special privileges as a deaf child, is a continuing dilemma for the parents.

Arbitrary training goals can cause considerable confusion for the deaf child. The internal maturational clock of children is dependent upon an appropriately responsive environment for the emergence of new coping patterns. If it is decided arbitrarily that a child must be removed from the bottle at one year of age, the child is totally unable to comprehend the rationale for his deprivation. Arbitrary toilet training goals have a similar effect. Parents of deaf children must be provided with information about appropriate training schedules, but most of all need reassurance that a prolonged period on the bottle or late toilet training will not necessarily set a pattern of "laziness" in the child.

Such character traits seem to be communicated and developed by much more subtle means most often not within the conscious purview of the parent. It is most likely that nonverbal material such as facial expression, posture, amount of affection given to the child and the amount of physical tension manifested when holding the child, play a considerable role in influencing which traits in the child will be reinforced and will become permanent character traits.

The establishment of appropriate behavior standards for the deaf child is a difficult issue. Parents most often use arbitrary schemes for proper conduct in deciding what type of behavior requires disciplinary measures and what behavior should be tolerated. They are always placed in a position where the effect of deafness prevents an assessment of proper behavior.

One of the well known techniques for parental coping with the deaf child, once the deafness is discovered, is the hope for magical cures. Parents hope for operations, for new electronic gadgets, and for radical new teaching techniques that will make the children speak. All of these hopes have been exploited by various commercial and professional interests. Thus, there are many available opportunities to prolong the time when they must take some constructive action to remedy the communicative vacuum into which the deaf child is placed.

Another coping technique is a complete disavowal of the notion that the deafness in the child creates any difference. A frequently heard comment is, "I treat him just like any other child." In its most extreme form, this represents an abdication of responsibility for special consideration for the deaf child. Such unrealistic attitudes pose extreme hardships for the deaf child, who is always forced to conform to standards which are frankly inappropriate for him. For the most part, such attitudes exist in modified form.

Certain pieces of the deaf child's behavior are not considered products of his deafness, and thus are more subject to his will. Deciding what is a product of the child's deafness and therefore must be dealt with with more patience and understanding, and that which is a product of the child's will and able to come under the influence of some of the standard-setting activities in the home, is a problem that the parents of the deaf child face all of the time.

When the deaf child is punished for actions that he cannot control, he is left feeling most confused. On the other hand, if too many allowances are made for destructive, nonconforming behavior, proper limit-setting will not be imposed, and the growth of the child's internal controls will not be fostered. Such information emphasizes the need for broad education of parents.

A question with both theoretical and practical interest is the means by which parents are able to ascertain that their child is deaf. One could chart the growth of the rudiments of language during the first year and speculate that as language behavior becomes more complex, and the child is expected to utilize it in his relationship with the family, the discovery of the deafness would become more likely. Studying this activity in detail will shed some light on the more detailed communicative transactions between the mother and the child.

Earlier in this research it was speculated that one could find a high correlation between socio-economic level and the child's age when the deafness was discovered. The original idea was that in socio-economic groups where a higher premium was placed on language maturation, the lags in the child's development of language would come to attention earlier. This proved to be an erroneous assumption!

One family with upper middle-class strivings did not fully confront themselves with the fact of the child's deafness until the child was two years old. A series of defensive posturings such as denial and rationalization are utilized to avoid this confrontation. In the latter mechanism, the parent will engage in a process of finding innumerable other environmental circumstances to explain away the child's failure to respond to environmental sound. What is more significant is the unconscious meaning of the deafness, which it is speculated, is symbolized more in terms of body mutilation, fantasies of abandonment and fears of isolation.

One can imprecisely describe an inverse relationship between the amount of time it has taken for parents to confront themselves with the child's deafness and the severity of the grief reaction that follows an explicit confrontation. The enormous psychic energy which has been invested in keeping from awareness the sometimes obvious fact of a child's deafness must be diverted to other objects.

Initially, the ego is left depleted, but the defensive energy must be shifted to other areas. It can easily flow into fantasies about the child's future "normality." The fantasy of future normality is developed to relieve the narcissistic inquiry which occurs upon discovery of the deafness. Energy that has been invested in the ongoing relationship with the child predicated upon a notion of his "normality" must now be diverted to the fantasies of future performance, thus depleting energy from the current relationship with the child.

One parent became aware of the child's hearing loss when she noticed that she could not hold the child's attention by reading to him. With her older children, she had observed their interest when she read to them.

Often judgments about the child's normality are made on the basis of the child's conformity or nonconformity, to play patterns of the other children, especially in a cultural milieu where a high premium is not placed on early development of speech. In these parents, however, one can uncover some earlier feelings of uncertainty which were never articulated; if they were, they might be quickly brushed aside by relatives and friends.

Another observation which provided the mother with a rationalization shelter, was her statement about her daughter that, "I feel she is going to get along okay because she has hearing." This child had only partial hearing and the degree to which it would function in her psychological and social development was still unknown.

Many of the play patterns of the young deaf child resemble those of the normally hearing child. If there are differences in these patterns because of the deafness in the child under the age of three, they are too subtle to ascertain and describe at the present time on the basis of unstructured observation. The only empirical observation made during the course of the investigation was the possible pattern of the deaf child hanging back longer than the normally hearing child from entering a new play situation. Deaf children must spend a longer time surveying and analyzing an ongoing play activity before they feel confident in joining. One would anticipate that play differences would not be great until the time when the child's language patterns in a social situation shift away from an egocentric orientation to language that takes into account the social actions of others.

The similarity of these play patterns constitute another trap for the parents. When they are confronted with the deafness, they view the child, see that he does many things similar to the hearing child, and again generalize from part pieces of behavior to the total behavior.

The defensive mechanism of rationalization is easily demonstrated among socio-economic groups where less emphasis is placed upon language development, and language is utilized primarily to structure the physical boundaries of the home. A deaf child's failure to respond to the human voice or other environmental sounds may be ascribed to a negativistic motivational system in the child. It is articulated as, "he just won't listen," or "he's being stubborn."

To prove that the child had preserved some hearing capacity, one parent cited an instance in which the deaf child crawled over to the radio to listen to it. It would not be difficult to prove to the parent that this did not mean good hearing. Rather, it is an indication of poor hearing. What is more difficult to deal with, is the parent's conviction that the child is showing evidence that he wants to use his hearing and, in so doing, if only he and his mentors will work hard enough at it, he will be able to develop normal speech through the conventional pedagogical techniques.

A protective fantasy that crosses all socio-economic lines, including professional groups, is the notion that the deaf child can really hear. As surprising as it may sound, the statements, "he can really hear," or "he can hear if he wants to," have been heard frequently. This apparently operates to protect the observing hearing individual from the pain that may derive from empathy and over-identification with the deaf child.

It is common for young deaf children beyond the age of two to move their mouths in imitation of mouth movements made by speaking members of the household. This constitutes another trap for parents who interpret this to mean that the child wants to learn to speak because he has the capacity to do so. This distortion arises from an *over-identification* with the child. If the parents were deaf, they would want to learn to speak and assume that the deaf child is doing likewise. This over-identification permits concentration on the one fact, the observed mouth movements, and controverts a series of other reality based observations – all of the occasions when the child does not respond appropriately to sound.

Little additional need be said about the well-established fact that parents often handle the initial realization of the child's deafness by the mechanisms of denial, suppression, and rationalization. This is not unique to the families of deaf children. Certain physical handicaps, however, are so obvious and so debilitating that the lure of treating the child just as any other child is not so tempting as in the deaf child. The invisibility of deafness has been one of the deaf child's greatest problems. Parents will tend to generalize to the concept of a "normal child" from pieces of the child's behavior that appear to be similar to a normal child's behavior.

As an example, one parent in discussing the future possibilities for speech and language development, re-affirmed her conviction that her child would ultimately turn out "all right" with the following observation: "She has a good quality voice, she will learn to speak." This particular child gave no evidence of significant functional hearing or the potential for normal language development and had the typically limited vocabulary of the profoundly deaf child.

Another trap is focusing on the notion of "good intelligence." By observing the child in his functions around the home, a mother is able to see the child achieving a certain amount of success in mastering some of the complexities of the average home. Some of the child's relationships can assume a semblance of normality by virtue of the child's natural interest in people and enjoyment of the company of others. Many nonverbal age-appropriate play activities such as puzzles, or back play, can be consumated by the child with evident success.

Again, the pathways are open for generalization to the total concept of the deaf child's function. "The child has good intelligence; he will do okay." Parents, once having articulated this position, have placed themselves in a more vulnerable position. This in turn places the professional in a sensitive situation. It is necessary for professionals to help the parents to see distortions about possible outcomes for their child, but to do so bluntly and without the offer of further supportive help, causes significant pain. The intensity of the pain can cause them to shrink from further professional contact. An approach in which the parents are dealt with honestly and openly is not much favored in many parental or professional circles because of this built-in psychological pain. Information about the child cannot be given out one piece at a time, because it is in that form that the greatest damage is done.

Knowledge about outcome in the deaf child must be disseminated through comprehensive programs that are equipped to deal with all aspects of the problem, instead of leaving the parents to lick their own wounds. Thus, any program offering training or education for young deaf children must have back-up services for the parents. Bringing the child to a setting where the parent is placed in the dependent position of asking others for help with their child mobilizes the feelings which having a deaf child has created. Professionals must become sensitive to these needs and not deal with them in an off-hand manner. A frequent form of dealing with some of these concerns in audiology clinics has been by corridor consultation.

A particularly inept approach to the emotional reactions of parents has been observed in a Chicago group which offers services to the deaf community. As part of a parent information series, young deaf children about eight to 10 years old are displayed before the parents. This is to demonstrate to the parents their child's future development. For the most part these parents had been previously unexposed to such children. The idea under which this approach was conceived, to help parents achieve a realistic perspective of their deaf child's future, is a reasonable one. To make a "cold turkey" confrontation is less than humanitarian.

No follow-up counseling is offered to help these parents deal with the reactions which have been stimulated. They are left to deal with their grief as best they can. It is a rare parent who possesses sufficient resources to make this a constructive experience. Some parents need much more individual counseling before they are ready for such confrontations.

The virtue of the multi-disciplinary team lies in the possibility of evaluating changes in the children when they are first observed. Because children move toward increasingly more complex behavior, certain symptoms which stand out clearly at a younger age will become more obscure with time exerting more subtle and harder to chart effects because they become integrated into the rest of the behavior.

Petit-mal seizure behavior is an example of observable symptomatic behavior that can be observed in a nursery school setting. A mother may notice such behavior at home, but because she is already overburdened with feelings stimulated by the deafness may be unable to allow herself a full realization of additional difficulties. The more objective environment of the classroom may permit such observations to be made.

Aggressive behavior to other children, withdrawal, and temper tantrums can sometimes be correlated with disturbances in the child's home or tensions arising in the nursery. The exchange of information between parent group workers and teachers and consulting psychiatrist can sometimes shed light on the origin of such disturbance.

The mother of a three year old girl suspected deafness very early. She knew that she had had maternal rubella. The deaf daughter was the second child. The first child followed a new miscarriage and then a hard labor. Because the first child was premature, the mother was not eager to have a second child.

The deaf child's birth was quick and uneventful. Almost from the onset, the mother began to administer home-made tests and noted that her infant was unresponsive to sounds. The only thing the child would reliably respond to were transmitted vibrations. The husband was reported by the mother to consciously disavow the possibility that the infant could not hear. Finally, when the infant was six months old, the mother forced the father to observe a series of tests which, because of their convincing nature, he could not refute. The father was said to be "numb for days."

Subsequently, the child was taken to a physician who confirmed the mother's diagnostic impression. The mother stated that after the discovery, "I felt sick about it; how could it happen to us." The husband, "the emotional one in the family," blamed himself and the older daughter who went to a birthday party where she was exposed to rubella.

After entering the nursery, the child cried for the first three weeks. The mother, in discussions with the psychiatrist, revealed the differences in attitude toward the child between herself and her husband. Further, she reported that her husband's excessive interest in his family, which included frequent visits by various of his family members, caused additional strains in the marriage.

Much of the frustration of the difficult marital situation was found to focus around the deaf child. With the passage of a few weeks in the nursery, the child became more manageable. After one year, the child was taken from the nursery and placed in a public school program where she was soon advanced two grades because of her readily apparent academic skills and willingness to develop lipreading skills.

The mother had participated in the sign language instruction group and utilized this vehicle in her home with the child. One year later, the child was seen in follow-up. The child's behavior had again deteriorated with much crying and temper tantrums to the extent that a neurological examination was requested to rule out the possibility of psychomotor seizures. The mother had reported that during these tantrums the child was noted to "foam at the mouth." The neurological examination including an electroencephalogram was normal. At the time the tantrums began the parents were in the process of obtaining a divorce.

Most of the disturbances in children are not so easily traced. Difficulties at home may show up in minor day-to-day mood frustrations. The greatest danger to the children lies in the over-generalizations about this behavior by professionals who are too quick to assign severe pathological significance to these behaviors before all of the facets of the situation have been evaluated.

Some parents have reported sleeping disturbances in their deaf children. For many, it has become a difficult matter to get the child to sleep. One child was unable to fall asleep until near midnight; during the day she was very active and never took afternoon naps.

This child represented a more extreme case; it is possible that the sleeplessness had organic origins as yet not conclusively demonstrated. The sleeplessness of other children seemed reflective of the parents' inability to make the deaf child sufficiently comfortable at bedtime so that the anxiety developed over the separation implicit in sleep could not be overcome easily.

Due to the Rubella epidemic, there has been a great influx into programs for deaf children. For the most part the public school programs are unequipped to handle all of these children. We have observed in Chicago numerous instances where children were excluded or given a delayed entrance into programs for deaf children. Some of the reasons for the exclusions were, to say the least, specious.

For example, one child who had participated in the pre-school nursery program was seen for an educational diagnostic examination. During the examination, the child had a temper tantrum. The child was found "unfit" for entry into the program. While in the pre-school program she was found to be a relatively well-composed child who played well with the rest of the children and seemed able to handle most stresses reasonably well.

There is no difficulty whatsoever in finding concomitant physical or emotional difficulties in current groups of preschool deaf children and school age young deaf children. As these children move into their latency years and the behavioral difficulties become more complex, it can be expected that the schools will be overwhelmed with behavior difficulties in these children. The impulse control problems so common in deaf children become more problematic when the children are older and larger and because of their size are not easily disciplined.

Throughout this investigation, members of the research group have become aware of the traditional controversy over proper communicative techniques with deaf children. The oral versus manual controversy has been discussed many times, and it has been evident to all that the continued adherence to oralism represents an anachronism in view of all of the evidence documenting the educational failures and emotional difficulties stemming from the lack of full communication between deaf people, other deaf people, and the hearing community.

The oral versus manual controversy, frequently spoken about but seldom debated constructively, is dealt with in one of several ways. One is to deny its relevance and submerge the issues by utilizing a series of cliches: "Every child should be given the chance for an oral education," or "A deaf child must learn to get along in a hearing world."

Another burying technique is to call it "an old controversy," conveying the notion that it no longer merits serious consideration; and another is to talk and argue about it in deference to more productive dialogue about the real educational needs of deaf children. Less attention is given to educational needs than is readily obvious. The educational methods employed are the same that have been used for many decades. A frequent answer by educators to a confrontation with the educational failure of deaf children is that the children were not products of "good oral programs," and that "now things will be different."

This deception capitalizes upon our society having been conditioned to the material gains of "progress." The need to "progress" becomes the rationale for the expenditure of enormous sums of money and the creation of a scale of priorities wherein certain "now" needs, because they involve remediation and not "progress," are given low priority status. We are lulled into believing that the educational system for deaf children is progressing right along with the many other activities in our society.

Deaf education is not a fully participating partner in our technocracy. There has been the infusion of some electronic gadgetry, some of it proving effective for children having some functional hearing, but for the profoundly deaf, there exists no electronic gadgetry other than an overhead projector that has been of real benefit. The means by which language information is given is the same.

In some centers, writing is used as a supplement, and here one would expect children to have greater language competence. Thus, as long as argument can be kept at the level of this system versus that system, the essence of the empirical pedagogical technique goes undiscussed. To implement the use of a simultaneous method does not automatically insure that proper communication will ensue and reasonable educational standards will be achieved.

The real effectiveness in the use of a simultaneous method of communication is dependent upon parents' commitment to this method. Because the home represents the primary learning environment of the young child, it cannot be expected that a method not used in the home will achieve initial success as a classroom instrument. Later, of course, deaf children learn sign language from their peers and utilize it as a method by which they can retain academic material. (Cicourel and Boese.)

Parents who have readily accepted the simultaneous method for use in communicating with their child in the home have generally been young, bright and enthusiastic women.

One must be cautious in espousing early education for young deaf children. If they are introduced early into the frustrating environment of an oral classroom, negative reactions to this experience can adversely influence their future regard for classroom experience. The school must work very closely with parents from the outset. It is not appropriate to place the child into a classroom situation without actively including parents. They must be given formal sign language instruction and individual or group counseling as is deemed necessary.

A frequent dilemma in families where there are siblings of the deaf child are the consequences of the shift of focus to the deaf child. Two extreme views are the insistence that the child be treated like all other children in the family ("like a normal" child); or making allowances for the child which exceed his real needs for special consideration.

This is not an easily resolved problem and not one where generalized solutions can be devised for the use of all deaf children. The point made frequently in this report that deaf children must be evaluated and helped on the basis of their individual needs indicates that generalizations about appropriate measures to be taken in the home are tenuous at best. In most families the siblings are reported to be very sympathetic and protective of the deaf child. The ultimate effects of deafness in the family are evident in the high proportion of professional workers choosing deaf education and rehabilitation because they have had a deaf person in their family.

We have been particularly impressed with the flexibility of the siblings in adapting to the use of manual communication. As can be predicted from psycholinguistic theory, children learn sign language with far greater rapidity and ease than adults and use it naturally and unselfconsciously in communicating with their deaf siblings. Strikingly, hearing children under one year of age have used signs that they have observed being used with an older deaf sibling.

This is of great significance in correcting the current state of isolation that exists between deaf adults and their hearing siblings. On many occasions, in interviewing parents and siblings of deaf adults, they have confided their regrets over the years of isolation between them.

In one family with a young deaf daughter, the mother reported that the deaf child's older brother refused to learn sign language. This brother was very attached to the mother, and it is speculated that to the brother, learning sign language would mean a commitment on his part to the deaf child which would increase her status in the family and lessen his. This mother, after leaving the preschool nursery program to place her child in a public school program, abandoned the use of sign language and changed to a classical oral approach. This raises the possibility that the mother was expressing through her son her own ambivalence about the use of the combined system.

A frequent and most distressing aspect of rearing a deaf child is the parents' inability to ascertain the sources of discomfort in a fretting child. There are, of course, a few physical stigmata of pain – such as a child with a painful otitis media pulling his ear, or bending over and grunting with colicky pain, or the physical signs available to the examing physician. No longer do parents take the child to a pediatrician; they first make a judgment about the source of the child's fretting.

A child at about the age of two can master the concept of physical pain and associate it with the word "hurt." The two-year-old deaf child is not in such a fortunate position. One of the initial signs that have been taught to the parents of deaf children, with whom we have worked, is the sign for "pain." This sign can be made in front of any painful part of the body. The child is taught it by gently pinching him when making the sign. Without this sign, it would be several years before the deaf child would have a word for pain in his vocabulary.

Commonly, teachers will not teach the word "pain," or "hurt" but will use the word "ow," because this is an easily speech-read phoneme. As has happened with many such words, the child is taught to use a word in a manner that does not conform to conventional English or idiomatic usage, but will become part of the deaf child's lexicon. Such techniques, which are included in oral programs, are part of what is considered "teaching the child the main language of his culture."

A frequent question that parents have is how emotions are conveyed to the deaf child. This question is often raised in association with questions about the efficacy of manual communication. This is one of the more easily answered questions. First, we are biologically programmed to interpret emotions. They occur automatically in us, and we can easily ascertain another individual's emotional reactions. Second, since the occurrence of emotions is not an abstract concept, but a readily observed concrete experience, they are easily associated with manual signs. The parent can easily sign "mad" to convey that she is displeased with a child's behavior; she can sign "crying," and indicate empathy for a fretting child.

Six children, formerly in the preschool nursery for deaf children, were placed in advanced public school classes upon their entrance into public school. All of these children were from families where the mothers utilized sign language taught to them in the preschool program in a suburban sign language class supported by the project. A basic theory in the creation of the preschool nursery is that sign language, when used early with deaf children, provides a language base upon which other languages can be built. It is necessary to have an internalized symbolic system before one can associate external aspects of a language system, such as the configuration of language upon the lips. The next step in this project is to find a school where combined system is not taught and match a group of children, screened for brain damage first, on socio-economic grounds.

Many parents have been observed who are dedicated in their commitment to oralism. They have convinced themselves, or have been convinced by others, that this is the only avenue to educate the deaf child. When alternative methods such as manual communication are suggested, one finds two possible reactions. One is manifest hostility controlled in varying degrees and the other is an open consideration of the facts.

Some of these parents have made a switch to manual communication even when the child had reached later adolescence or young adulthood. The suburban sign language class sponsored by the project attracted some of the parents of older deaf children who became most enthusiastic after initiating the use of manual communication with their child. Some regrets were expressed, but these parents in general were so delighted in the newfound capacity to communicate with their child that they were able to leave their regrets behind.

In parents where there is mobilization of anger, one can speculate somewhat on the relevant dynamics. These parents have focused all of their feelings about the child's deafness on the one issue of communication. They have successfully excluded from their awareness all of the areas in which the child is unable to match his hearing peers and have concentrated their thoughts around much more limited goals. Anger at the child for introducing the stress of having to communicate with him by difficult means and damage to their self-esteem becomes bound up in this one commitment which they believe is a solution. To ask these parents to examine an alternate method implies that they must relinquish the method by which they have bound up their anger and return to the early, unresolved feelings about having a deaf child. Because of the nature of the parents' personalities, they are unable to make this switch, and there is hostility directed at whoever stimulates it, who then must back away.

It is evident that auditory stimulation is not necessary for ego development when one can chart a stable adaption of a given deaf person. If one were to place a deaf individual in a situation wherein he had to utilize hearing and speech in order to cope and no other form of communication was available, one could expect a more obvious deviation from a normal pattern of adaptation.

The deaf individual is able to utilize other sensory functions to cope with many ordinary social situations. Often a deaf person will cause no siginificant stir in the hearing environment because he will withdraw from participation, relieving the hearing person from having to accommodate to the deaf person's idiosyncratic communication modes.

If the hearing environment suddenly demanded full participation in the communicative aspects of the social environment as a pre-condition for continued acceptance with the threat of being ostracized or punished, this would be a significant pressure upon their adaptive capacities. It cannot be predicted with great accuracy what each deaf person might do. If an unstable ego has been defended and managed by inflexibility and rigidity, then one could anticipate breakdown. If there is a baseline of stable ego-function with inflexibility and rigidity as a coping technique used in some unfamiliar social situations, when familiarity is achieved one would expect a lessened rigidity and the liberation of more substantial affect in the social situation. What sustains many relationships not created for economic or political consideration is available positive affect that is exchanged like currency. The promise of more positive affect available for a future encounter increases the possibility for that future encounter.

Unfamiliarity in new social situations is a fact of life for young deaf children. In many instances it is demanded of them that they only communicate with forms used by the hearing culture. Why is it that these children are not driven to psychotic adaptations under such conditions of extreme isolation? The answer may perhaps be found by an examination of the priorities for children in social relationships. Satisfying their primary physical needs for food, shelter, clothing, medical care, and safety as a pre-condition is taken for granted. We added needs peculiarly their's as young human beings. They need an environment in which they can be provided stimulation for the growth of their cognitive and language capacities and increasingly complex and variable social situations to explore. After provisions for fulfillment of the psysiological needs, is the need for affective warmth.

Warmth is easily communicated nonverbally. Children need a responsive adult available to sense need and react appropriately. Children are so highly adaptable, however, that occasions of inappropriate response are not necessarily damaging.

Psychological damage is created only when an adverse relationship with pathological elements is prolonged. An adult's emotional responsivity can be communicated to the deaf child and is done so nonverbally. The capacity for nonverbal communication of emotions is present in all human beings. The communication of complex emotion through interactional patterns allows for the flowering of additional subtlety in relationships, but is not critical for development. The need is for the availability of a responsive adult in a continuing relationship with the child.

That deaf children do not for the most part make psychotic adaptations attests to the fact that auditory stimulation is important for full and complete ego development, but not critical for the growth of stable ego function. Some of the stability may be imparted by restricting patterns of social action, what we call rigidity and inflexibility. When overwhelming social pressures occur early, there is arrest at immature periods of social development. But does this imply fixation? Answers to this lie in the intensive treatment of adult deaf patients. On the basis of limited clinical experience with such patients, it is speculated that in some patients there is arrest, rather than fixation.

A lack of audition creates ego aberration which when viewed in the arena of social interaction is not pathological unless the social environment places the unrealistic demand that the deaf individual communicate only through vocal means.

An over-riding problem in investigating the development of deaf children has been to measure aberrations in ego development caused by deafness. Because the concept of ego is an intellectual construct, one cannot describe its function as a totality, but only in terms of its several allocated functions. With young deaf children, a decision must then be made as to the relevant functions for study. Guidance for these decisions is derived from observation of behaviors in adult deaf persons who show obvious deviations from average expected behavior.

The first and most prominent deviant behavior is language usage. This is, of course, a most complex problem. We were able to design a brief pilot study on language development. In this study, parents were given questionnaires to complete on a serial basis, to record use of spoken and gestural communication. What stood out most prominently in this study, however, were the elicited emotional factors and their influence on the manner in which the forms were completed.

Another critical consideration of ego development is the capacity for impulse control. Problems in the control of aggressive impulses have given deaf children much grief. Two relevant factors operating on the establishment of control of aggressive impulses are the development of language, and input of information about the social structure of the environment so that acceptable codes of behavior are established. Language provides one method by which the ego is able to structure aggressive impulses through the defense mechanisms of neutralization and sublimation.

Deaf children are at a distinct disadvantage because the subleties of social codes are not always easily communicated nonverbally. Thus, when a deaf child is prevented from consumating a given action because established social codes prohibit it, and he has been unable to extract knowledge of the social code from the nonverbal environment, his frustration can release unstructured and therefore potentially destructive aggression. An unanswered question is the extent to which such patterns are internalized and result in permanently diminished control over aggression extending to adult life. It has been found that impulse disorders are more common among groups of deaf persons with psychiatric illness than among hearing persons.

A lack of empathic behavior on the part of the deaf adult has been noted by some. Empathy, of course, is not all inborn but develops gradually through the child's experience with his parents and others. Later, as the child emerges from his earlier period of egocentricity, he is able to view the situation of others constructively, compare it to his own, or members of his family, and create appropriate empathic responses.

This does not mean that a child cannot respond with sensitivity when he is younger. Some of his capacity to do so derives from the manner in which he is dealt with by his family. However, if a deaf child is placed in a virtual commuications vacuum, the lack of compassion which he experiences does not create in him the wish to deal with others sensitively. Also, the development of language allows the exploration of subtle aspects of the human condition, both directly and vicariously through literature. The poor reading skills of deaf children shut them off from this avenue of exploration of the richness of the lives of others. Thus, deafness does not preclude the development of empathy; it is the failure to communicate with deaf children, and their language impoverishment that creates the inability to explore in depth the situation of others.

In an ordinary train of social development, one would expect to find a child developing knowledge of vulnerabilities of those people with whom he has the most contact, his parents and his siblings. Such knowledge grants him some competitive substance so that a child is often able to force a social engagement between himself and a vulnerable adult.

But a deaf child must force engagement in an undeveloped physical manner and when he hits or pushes, there is not always a hostile intent. The hearing community may interpret it as aggression, and the child will be disciplined accordingly. As development continues, progressive isolation occurs. The chief mode by which deaf children and deaf adults come to deal with the hearing world is to isolate themselves from contact.

Deaf people have much difficulty in ascertaining the true motivation of others. Thus, they are at a disadvantage in social situations wherein misinterpretations of motivation resulting in ill feelings can occur. Then, a deaf person will avoid contact with hearing people. Facts such as this are deliberately overlooked by those who outspokenly espouse the necessity for deaf people "to get along in the hearing world." Isolation from so many of the subleties of society which are automatically incorporated into the language of speaking and hearing people in many instances prevents meaningful communication between deaf and hearing people.

Deaf persons are forced to communicate around concrete things and activities. They have been excluded from much of the connotative richness of language. When this cliche about "getting along in a hearing world" is invoked, it conjures up in many the fantasy of a fully conversant speaking adult participating in normal social discourse which is, of course, far from the usual situation for deaf individuals. Communication with the hearing world is usually confined to a deaf person laboriously struggling to make himself understood. This limited conversation boils down to mutual assent or nonaffirmation of a few nouns or verbs with the remainder of the context only partially understood. Often, it is believed that communication consists of only the exchange of key words; the necessity for the establishment of consensual context is ignored.

The character traits of reticence, stubbornness and inflexibility which are commonly observed in less well-adjusted deaf persons are very much related to early communication difficulties.

13. Description of a Preschool Nursery for Deaf Children*

by Eugene Mindel, M.D.

ONE OF THE most significant early problems in the establishment of a preschool nursery school for deaf children employing simultaneous manual and oral communication a method novel to teachers, other professional staff and parents, was overcoming some of the initial resistances to the use of the method. This does not now hold wide popular appeal among the hearing professionals in deaf education and rehabilitation. The old saw "every child deserves the chance at an oral education," still continues to be manifest at times despite a conscious intellectual commitment by some to the simultaneous method.

One could, of course, cite fears of pressure from establishment groups as the cause for resistance. Such pressures are not to be depreciated. They can be formidable. But since the use of the simultaneous system is a logical method for work with young deaf children, readily grasped by those who are more interested in establishing communication than in sustaining already embraced methodologies only, the reasons for the resistance must lie much deeper. Personality dynamics around reactions to authority structures make it difficult for such individuals to make methodological switches.

Gestural communication in the development of normally hearing people is relegated to a second class status as soon as vocal linguistic skills are sufficient to become utilizable in society. There is probably an unconscious association between the use of a gestural language and one's primitive impulses which stimulates considerable repressive pressure. This manifests itself in the rationalizations and denials that have prevented so many parents and professionals from adopting a logical method to communicate with the deaf child. Thus, teachers or parents or other relevant personnel make commitments to methodologies on the basis of factors which are not readily within their grasp. These unconscious commitments account for the extreme difficulty encountered in attempting to bring about a change of attitudes.

Work with young children requires that the adult be comfortable within a relatively unstructured, highly fluctuating environment. It is not easy to encourage teachers to follow the natural inclinations of the child. The need to educate children in wholesale numbers has led to the establishment of structures and techniques that often are in conflict with the "natural inclinations" of the child.

There is much dispute over the issue of "natural inclinations." Many are committed to the idea that a child, when left to his own devices, will not respond to stimulating materials in the environment. They believe that he must be continually prodded in order to "learn." The relevant cliche is "the child must be made to learn." The child's functions on the basis of structures very different from adults leave the adult feeling uncomfortable: seeking for boundaries. It follows that the more rigid one's personality structure is, the more he will seek to establish such boundaries.

Oralism has represented a "thing" to do with deaf children. A shift from that position requires that an individual drop a former method and shift to one more naturalistic in its configuration.

Beyond these natural "built-in" resistances to the use of a simultaneous system, if a shift in methodology is to occur, the professional and the enlightened parent must acquaint themselves with some of the rudiments of language development. This is no easy matter, for the most salient information which has come forth from the psycholinguistic community is novel and highly technical.

If a conscientious language education program is to be undertaken for deaf children, then the responsible persons must establish appropriate goals.

For example, below the age of three, the early introduction of lipreading as a major

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educational tool misses the point of the technique. Meaning is still very closely related to the physical environment for young children; lip signs do not become meaningful without a relevant context. The establishment of demonstration homes was a step toward remedying that situation, but even such homes are so filled with conflicting stimuli that the teacher, unless she is extremely meticulous and concrete about her language instruction, has no assurance that the child is associating the proper meaning to the lip sign being displayed to the child.

Therefore, the known sequences of language development, and the sequence by which the child learns to associate signs and meaning, must be an integral part of a program as conveyed by enlightened teachers.

Attention has been given to the matter of class size in the preschool nursery. When our program began, class size was unrestricted and the only children excluded from the program were deaf-blind children. As many as 14 children were being managed at one time in a small classroom. Handling this number of children with two teachers was an inordinate strain for the teachers, ultimately, therefore, the children were divided into two groups, dependent upon their ability to integrate specific material for cognitive stimulation versus their need for socialization and impulse control. A much more natural grouping was three children for each teacher, giving the teachers an opportunity to take individual children to another room for individual instruction in language development techniques or auditory training.

Much attention has been given to the types of materials included in the nursery. As the program evolved the environment assumed a much more orderly appearance, somewhat sparce looking to the outside observer. Instead of purchasing materials, these were designed and made by the teachers and the consulting psychiatrist. The walls were decorated with pictures of the children and their name cards, engaging pictures of animals decorated with colored circles and numbers and other visually appealing materials. Such an evolution is considered a necessary part of a progressive preschool setting. It represents the increasing grasp of the intellectual merit of the materials by the teachers and thus increases their effectiveness in educating the children. They can thereby present clear cognitive stimuli and observe and record the child's reactions.

We will not write at length on the kinds of community pressures brought to bear against the program. A preschool program employing a simultaneous system was greeted less than enthusiastically by administrators and many teachers in the nearby community. Although professionals working in the program are emotionally vulnerable to the attacks by their professional colleagues in other institutions in the community, they had the support of their fellow professionals in the program.

It is the parents, however, who have had to sustain the brunt of the onslaught. Direct threats to parents that their children would not be included in a public school program if they used sign language were made both privately and publicly. Parents who had been able emotionally and intellectually to accept the fact of their child's deafness were more able to fight these assaults and took aggressive action in protecting their child from pressure.

Those parents who have not been able to perform the emotional work necessary were deeply hurt and confused by these attacks. It would be nice to be able to say that all of those things are in the past; this is, unfortunately, not the case. Any new group in this community which has undertaken to encourage the development of a simultaneous system of instruction in their school system has suffered the same kinds of pressures. At the time this report was written, two new groups are forming in the North and Northwest suburban areas.

Evaluative methods for young deaf children have not been adequately developed. Those that are available have a number of major drawbacks: (1.) Often, they have not been standardized for younger age groups; their norms are statistical extrapolations from the norms of younger children; (2.) They have not been standardized for young deaf children; (3.) The standard test batteries often measure achievement and not cognitive capacity, although many of the available tests could be utilized for the latter if they were interpreted on a developmental basis; (4.) They are performed in one or two days over short segments of time so that slow or idiosyncratic solutions will be scored as slow or noncompletion; (5.) Measures of interpersonal function with adults and peers are not included or are done in a strictly empirical, nonratable, manner; (6.) No indices of rudimentary defensive functions are included (such as how the child handles novel situations which can be regarded as stressful.

Any measure designed to follow the emotional, cognitive, or language growth of deaf children, if it is to do any more than give a rough estimate of current function, must be carried out on a long term basis. Careful observational techniques must be incorporated into the basic design of the teaching environment. This puts a greater demand upon teachers working in this setting. They must understand the values of the various materials which they employ. They must also keep careful notes on the work of their children. The older the child gets, the more difficult this can become, because of the great complexity of the mind of children beyond the age of four.

The preschool nursery program in its configuration represents an extension of programs implemented upon the child guidance concept. All the needs of the family and the child are deemed appropriate for consideration and service by the program. Thus, from the outset, contact with the parents was established by individual sessions with the consulting child psychiatrist, group sessions with a social group worker and meetings with a sign language instructor. This is a woman with many years of experience in working with deaf children who was also able to provide information regarding the academic problems that can be anticipated. Because the program was novel, it was hoped that the attention it would attract would spin off as stimulation for other programs in the community and beyond.

In order to study the growth of cognitive development in deaf children, attention was given to the design of materials that presented clear unambiguous challenges which could be observed and recorded by the teachers. We started by designing square blocks with cut-out circles. The blocks are of five different colors. The child's job is to make the appropriate color matches by placing the colored circles into the proper holes. The materials are large and the colors are bright to fit the interest and capacities of the young child. At what age is the child capable of completing such tasks? A simple and obvious task like this provides a method to observe the para-test behavior.

In order to study cognitive growth in deaf children, one must be able to demonstrate some orderly chain of cognitive growth. Organizing the challenges on the basis of color, form and size is the most obvious way to start. It has been determined that an 18-month old child can successfully complete color matches with the color square. Thus, we can establish a baseline for the development of a cognitive chain.

The older child utilizes these materials not only for making the appropriate matches, but uses the blocks for a variety of other games which are devised spontaneously. This is an area of great importance. Spontaneous activity in the cognitive area is a measure of intactness. It indicates that the child's capacity to organize internal and external stimuli is functioning adequately so that there is sufficient energy remaining to turn to other tasks. These include both emotional and cognitive stimuli.

A next step in studying the organization of the cognitive chain is the introduction of color independent of form. To this end, cards with colors presented in amorphous shapes were designed. Too often, when deaf children are presented with objects for which they are to learn names, the objects are not clearly presented. Often pictures from magazines are used, or the teacher demonstrates a thing or action, but it becomes obvious that the child can choose one of several factors in the presentation on which to concentrate.

For example, the teacher may want the child to learn to lip read the word "eat." She may show a picture of a little boy earing an ice-cream cone. Although the fact that he is eating may be obvious, one has no way of determining what aspect of the scene the child will choose to concentrate on: He may be thinking about the cone, the little boy, eating, or some aspect of the background which strikes his fancy.

Thus, by presenting amorphous color forms, a child is forced to attend to color only and from this it can be ascertained that he does or does not recognize color differences. Using these as the beginning, the color words and signs are introduced. Through variations, the child is moved from the color itself, to the graphic representation of the color. First, the word is written in the matching color and eventually, the word is written in black to achieve independence from the concrete representation of the object. Because of the child's age, the word is still a sign, it is still inextricably bound to the concrete object. It is only later that it achieves independence from the concrete object.

Another project utilizing unambiguously presented color and form has been constructed utilizing the Cuisinaire rods. These rods, which measure from one centimeter to ten centimeters, each have a different color. As they were designed, they were to be used by children already enrolled in the primary grades. However, since children who are younger can make form and color matches, they provide an opportunity for the deaf child to gain experience in working with quantitative concepts and to attach the appropriate language. One cannot make requests of the deaf child for the use of these materials. Responses must come from their ability to understand the nature of the challenge by an examination of the materials. Too often, it is assumed that deaf children will know what is expected of them because of the commoness of a given material.

Rubber stamps were designed that match the size of the rods. These are available for the teacher to stamp out a variety of problems for the child. It is most important that the teacher be given materials that are flexible, so that individuality of competence can be accounted for. Some children have taken to the use of these materials readily. It is common for them to want to do the stamping themselves, indicating their willingness to become involved in cognitive mastery. They are invited to color the blocks the appropriate colors and to match them with the rods that fit. Around these simple tasks, the teacher employs the simultaneous method of communication. The importance is that the exact act, or concept, or object, the teacher is interested in can be specified to the child. They can readily determine whether or not the child is accomplishing what is intended.

The use of these materials progresses from color signs to color words and as the children get older, they will be used physically to represent more complex language forms. For example, the use of prepositional speech is particularly important to develop in deaf children as the examination of written productions of adult deaf people will demonstrate. With simple demonstrations possible by the use of the rods, prepositional phrases like, "this rod is *in front of*" or *"on top of"*, are readily constructed and demonstrated.

These materials have not been in use for a sufficiently long time to carry our discussion further, but they represent an area when considerable work is in progress. It should be emphasized again that what is central to this project is a reduction in the ambiguity of language stimuli.

In the evaluation of young deaf children, parents are frequently asked about language development to date. It has been discovered that these reports are not always reliable. Certain randomly occurring phonemes will be reinforced and used in association with certain objects in the environment. If an outsider unfamiliar with the usage of these words in the home of a deaf child hears such words, they will be unable to identify them.

The more residual hearing the child has, of course, the greater the potential for the development of spoken language. Often such children can have vocabulary collections numbering 100 or more words, but again such words are not always recognizable to the uninitiated listener. Such parents may prolong the time when something more definitve in the way of communication with the child must be developed. The emphasis on the number of words, rather than the proper usage of words in syntactical sequences, diverts attention from their retarded language development.

A questionnaire was designed to elicit information from the parents regarding language development in their child. Information was sought about all aspects of linguistic competence both in the use of spoken language and manual language in its expressive and receptive aspects. An initial attempt at statistical analysis revealed that this sort of material cannot be used at this level for statistical analysis. However, the questionnaire does provide a viable method for eliciting data about language development, but, the parents must be interviewed on an individual basis and the children seen periodically.

The problem of the loose interpretation of certain phonemic productions prevents accepting the reports provided by the parents at face value. Further, some of the parents conveyed a sense of defeat and discouragement by apathetic responses; their responses were unusable. To obtain further data, this will have to become a separate study with a professional staff person who can devote at least one-half time to it.

The more challenging question is the use of such material to test some of the hypotheses developed by Chomsky and Lenneberg regarding biologically derived linguistic structures accounting for the orderly development of language competence. A reduction in the linguistic output imposed upon the subjects by virtue of their deafness makes language research data more accessible.

Charting the emotional development of the deaf child is perhaps the most difficult task. Their usual behavorial patterns are idiosyncratic due to the deafness and the coping methods which they must develop. An mentioned before, aggressivity is enhanced in order to allow involvement with peers, siblings or parents. It is almost impossible to know what the deaf child is thinking because the lack of language prevents him from articulating his thoughts or feelings and prevents any pursuit of questions by the mother.

Thus, any mental health professional in the position of being consulted about the behavior of the deaf child must have familiarity with behavioral characteristics of deafness. Beyond that, classroom behavior is the most important area in studying the emotional development of the deaf child.

To this end a rating scale was devised that could be utilized in a nursery setting. It can be used by an observer sitting outside of the classroom. It is a nonverbal system which basically indicates the capacity of the child to adapt to the novel environment that the nursery provides. The effects of two qualities of stimuli impinging upon the child and his life space are recorded – affectionate or positive stimuli and negative or stressful stimuli.

If the scale were to be used in full operation, it should be used serially by several observers. The underlying hypothesis is that stabilization of the child's behavior should occur over time in the nursery. If it does not occur, then one must look further for factors interfering with the child's stabilization; one must look to the family situation and to the integrity of the child's neuromotor apparatus. Stabilization of function is defined as greater control over overtly manifest energy expenditure. As one examines the scale, it can be seen that a child, with consistent scores at either end of the scale, represents a pathologic deviation; either an excessive expenditure of energy or little observable expenditure, representing withdrawal from the environment.

In operation the scale was found to be useful up to about the age of four years. After that, the child's coping patterns become to complex for the observer to reduce to simple rating values. The child's field of interest is too extensive; and too many environmental factors are surveyed prior to a decision. Children who reveal initial stability require only occasional observation, whereas those who are quite unstable at the outside require greater amounts of time for observation as their behavior is more random and unpredictable.

Aside from the specific rating scale, there were a number of other functions giving some indication of the child's coping capacity. Some of these are listed as follows: The child's invention of spontaneous games; his participation in spontaneous games devised by other children; the child's capacity to remain at an activity which he chooses to engage in (some of the more hyperactive children demonstrate a "touch and go" pattern of activity); how successfully the child competes for a chosen activity that other children are interested in; has the child chosen any consistent friends; can the child be drawn into a group by a teacher's encouragement; how persistent is the child at completing an activity which he has found difficult; can the child's unsuccessful coping pattern be modified by a teacher's intervention?

14. Studies of Cognitive Process in Deaf and Hearing Subjects

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1. Introduction

THE PURPOSE of this study is to clarify the cognitive processes of the deaf, to assess their efficiency and inefficiency in cognitive operations, and eventually to find out a way to improve their efficiency and to remedy their handicaps. The study includes four major topics of study: (1) organization of short-term memory, (2) judgmental constant errors, (3) concept attainment, and (4) scaling. The first two topics pertain specifically to the transformation and organization of input stimuli presented in short temporal sequence. The last two topics are concerned with the organization of objects or events into classes, relations, and numbers, and the related organizational rules which are essential for the complex cognitive operations.

The major variable that we have to deal with in the deaf is their severely impoverished language system and the impact of this deficit on their intellectual and emotional development (e.g., Furth, 1966; Rainer et al, 1963). Studies with normal hearing subjects have amply demonstrated the powerful role played by the language system, with its rule-governed capacity for analysis and synthesis in coding and organizing their experience and thinking (Bruner, 1966; Neisser, 1967). It is, therefore, our special interest to examine the extent and nature of language as a factor in cognitive processes by means of comparative studies between deaf and hearing subjects. The clarification of such fundamental processes is a prerequisite to the development of an effective program for the education and rehabilitation of the deaf.

Since each of our four topics is being studied by a series of integrated experiments, the specific purpose, methodology, and some preliminary findings of each experiment will be described separately.

Exp. 1. Organizational characteristics of free recall in deaf and hearing subjects.

Purpose

In the sense of G. Miller's (1956) unitization theory, memorization is a process of organization which allows a person to exceed the limit of his memory span. The nature of such organization can be attributed to the pre-existing rules and mnemonics which are available to him, such as the language system or cognitive schema toward which the input items are assimilated. Several studies have investigated organization in memory through clustering patterns of free-recall (e.g., Mandler, 1967; Tulving, 1962; Bousfield, 1953). That is, subjects tend to organize the input materials into semantic categories or/and in an idiosyncratic fashion, and the improvement of performance (recall) is found to be a function of the increase of organization, as estimated by the sequential dependency of the output.

Our experiment aimed to observe the development of Bousfield's (1953) clustering pattern using a word list of high taxonomical frequency and Tulving's (1962) subjective organization using in both deaf and hearing subjects a list of seemingly unrelated words as the repeated free-recall trials progress, and to relate these organizational indices to their recall performance. The semantic categorical cues were, therefore, maximized in the former list and minimized in the latter.

Method

The line drawings of objects with captions, selected from the Peabody Picture Vocabulary Test (Dunn, 1965), were made into photographic slides. *The categorized word list* comprised 16 words made up of four each of four different categories, namely, animals, foods, human actions, and natures.

The noncategorized or mixed word list comprised 16 seemingly unrelated words selected from the same test. Ss in a small group (five to 20 Ss) were given 16 free-recall trials for the 16 pictures for each word list. Sixteen different sequences of 16 words were constructed for each list so that each word appeared in each of the 16 serial positions once, preceded and followed by each other word just once. Two-second exposures for each of 16 pictures were followed by 90-second recall periods.

Ss were told that their task was to learn a list of 16 words that would be presented to them on 16 separate trials. At the end of each trial they were to write on a card pad bound with a ring as many words from the list as they could remember. Then they would be shown the same words again, in a different order, and at the end of the trial they would again write down all the words that they were able to recall. The Ss were also told that the order in which they recalled the words did not matter. A practice free-recall on five unrelated words was given prior to the experiment proper. The mixed list was given in the first session and the categorized list in the second session. The two sessions were separated by at least 24 hours.

The *Subjects* who have participated in Exp. 1 thus far were (1) 57 prelingual deaf students from the Indiana School for the Deaf (age: 13 to 20 yrs.); (2) 28 students from the Chicago State College (age: 18 to 20 yrs.); and (3) 28 students from the University of Chicago's Junior High School (age: 12 to 14 yrs.).

The average IQs for the 13 to 14 year deaf and hearing Ss were 111 and 124, respectively, and those for the 18 to 20 year deaf and hearing Ss were 113 and 111, respectively. The IQ for the hearing older group was estimated from the Shipley-Institute scale administered right after the completion of the experiment, using a conversion equation for WAIS IQ (Stone and Ramen, 1965). The IQ's of the other groups were obtained from the latest school record.

In the present study, *the measure of the clustering* is the SCR (stimulus category repetition) developed by Bousfield and Bousfield (1966). For the SCR measure, the items from each category, which are recalled in immediately adjacent output positions, are counted and summed for the four categories. E (SCR) is the SCR score that can be expected by chance. For *the measure of subjective organization,* Mandel and Dean's (1969) ITR (2), which is a modification of Bousfield and Bousfield's (1966) ITR (intertrial repetition) measures, were used. Mandler and Dean's (1969) ITR (2) is defined as a bidirectional contiguous occurrence and indicates the number of adjacent pairs of words common to two successive recalls. E ((ITR) 2) is the ITR (2) that can be expected by chance.

Results

Recall Performance. The mean numbers of trials for the 80 percent and 90 percent recalls of the categorized and mixed lists are, respectively, summarized in *Table 8.* The 80 percent recall shows no difference between the older deaf and older hearing Ss in both the categorized and mixed word lists, but the younger deaf takes slightly more trials than the younger hearing to reach the criterion. When the 90 percent recall is taken as a criterion, the deaf groups require consistently more trials than the hearing groups, although the performance of older deaf Ss for the categorized list is still quite comparable to their counterparts. The differences between the deaf and hearing groups and between the young and old groups are more conspicuous in the recall of the mixed list than in the categorized list.

Mnemonic Organization. The average measures of the last eight trials' clustering, SCR, and subjective organization, ITR (2) resulting from the categorized and mixed word-lists are, respectively, presented in *Table 9.* These organization scores are all clearly above the chance level, E (SCR) or E ((ITR) 2). The clustering scores (SCR) of the older and younger deaf groups are smaller than those of the respective hearing groups. It should be noted however, that the SCR measures of the younger groups are higher than those of the older groups in both the deaf and hearing Ss. The measure of the subjective organization (ITR)2 reveals no difference between the younger deaf and younger hearing groups, but it is markedly smaller in the older deaf than in the older hearing Ss.

It appears that the clustering organizational strategy for the word list used in this experiment is well developed by the ages of 13 to 14 years and the younger Ss depend upon this strategy more than the older Ss do. In spite of the low SCR scores, the older groups' recall performance of the categorized list was better than the younger groups' *(Table 8).* This is more conspicuous in the older deaf Ss. This means that the older groups, especially the older deaf Ss, must utilize mnemonic strategies other than those reflected by their clustering scores.

The subjective organization, on the other hand, is not well established by the ages of 13 to 14 years. While a marked developmental trend of the ITR (2) measure is seen in the hearing groups, the measure of the older deaf group remains low. Again, some factors other than ITR (2) organization have to be assumed in order to account for the comparatively high recall of the older deaf Ss. Furthermore, the better recall of the younger hearing Ss to that of the younger deaf Ss has to be explained by other factors than the ITR (2) score.

It is, therefore, apparent that the organization measures as reflected in the SCR and ITR (2) scores explain the recall performance of the Ss, especially the older deaf Ss, only in part. Since these measures are based upon the sequential dependency between two successive recall trials (output and output), additional strategies used by the Ss might be demonstrated, if an analysis is made for the effects of the input order of the items on the subject's recall order (input and output). Mandler and Dean's (1969) ITR (2) will be, therefore, applied to the number of bidirectional repetitions of pairs of items in an input and an output of each trial. Examinations on the first four and last four of the 16 input items, i.e., the primacy and recency effects, and on the types of errors, such as acoustic and semantic intrusions, are also planned in the current analysis.

Exp. 2. Judgmental bias of deaf and hearing subjects in successive pair comparisons of numerosity

Purpose

Psychophysical experiments always involve constant judgmental errors. Perhaps the most fascinating of these is the time-error (TE), since it has afforded significant clues to the process of judgment, and for that reason it has become possible to theorize the cognitive processes involved in successive comparison (e.g., Guilford, 1954). In the TE paradigm, two paired stimuli are presented in successive order for comparative judgment.

A systematic judgmental bias occurs in this situation, i.e., an over- or under-estimation of the first stimulus. In this paradigm, when the second stimulus is presented, the impression of the first stimulus has to be stored in memory and retrieved from the storage for the comparison. The constant bias resulting, therefore, provides an opportunity to infer the process underlying in the comparative judgment or the fate of the first stimulus impression during the short intrapair time interval.

For instance, the assimilation theory (Koffka, 1935) postulates the assimilation of an electro-chemical trace formed by the first stimulus to the entire trace system in the brain as the basis of the TE bias. According to the adaptation-level theory (Helson, 1964), the second stimulus is compared not only with the first, but with the person's adaptation level toward which the first impression is being pulled during the intrapair time interval, and the bias is the results of this pulling process. If the deaf Ss have special difficulty in temporal processing of information, or deficits in encoding, retaining, and retrieving input events or objects because of their limited language system, their TE behavior would deviate from that of hearing Ss. This weak memory system, if it exists, would compel them when they make the successive comparisons to rely more on the second of a paired stimuli, which is current, than the first stimulus, which is in memory.

Using numbers of dots as stimuli, the present study aimed at describing the judgmental bias of deaf and hearing subjects in successive comparisons of numerosity. Exp. 2 consisted of the following four experiments.:

Experiment I. The purpose was to observe the effect of numerosity size of paired stimuli on the TE, using the method of pair comparison. In this experiment, the number of dots in each paired stimuli was varied, and each pair was presented twice to the Ss, once in AB order and once in BA order. The Ss were asked to judge whether the second stimulus has more or less dots than the first simulus. The TE was the judgmental discrepancy between these two presentation orders, taking the A or B stimulus as a standard.

Experiment II. The purpose was to determine whether an interpolation effect occurred. In this experiment, the number of dots in each pair was kept at about medium size, but each pair was interpolated by a stimulus. The interpolated stimulus had more or less dots than the pair, and the Ss were instructed to ignore them. Other features were the same as in Exp. I.

Experiment III. The TE behavior was observed by means of the method of constant stimuli. In this experiment, a fixed standard stimulus of a medium number of dots (53 dots) was compared with a number of variable stimuli, each having more or less dots than the standard. The TE was the difference in the number of dots between the standard and the variable stimulus which was selected as equal to the standard stimulus.

Experiment IV. The purpose was to determine whether an interpolation effect occurred in the TE by the method of constant stimuli, interpolating a third stimulus between the two paired stimuli. In order to avoid confusion the TE resulting from Exps. I and II will be called *the pair TE* and the TE Exps. III and IV *the constant TE.*

Method

Black round dots on white background were made into photographic slides for presentation by a projector. The number of dots on the 19 slides, which served as a stimulus pool, ranged from 22-102, with 1.1 as a constant multiplier for the steps. The number of pairs for Exp. I was 20; presenting twice, once in AB order and once in BA order. The number of pairs for Exp. II was six; presenting four times, twice for A(I)B and B(I)A order, and twice for the high (large number of dots) and low (small number of dots) interpolations. The number of S-V (standard-variable) pair for Exps. III and IV was five, respectively; presenting six times, three times in S-V order and three times in V-S order. The half of the S-V pair was interpolated with a large number of dots (high) and the remaining half, with a small number of dots (low).

In all four Experiments the Ss were instructed to tell whether the second slide, or the third slide in the case of interpolated pairs, had more or less dots than the first slide. In making comparisons of the third and first slide they were instructed to ignore the second (interpolated) slide. They answered by checking one of five ordered categories which ranged from “many more dots than the first (5)”, through “equal numbers to the first (3)”, to “much fewer dots than the first (1)”.

In Exps. I and II, when a slide of a pair was judged as carrying more dots in the second presentation than in the first presentation, it was called a *negative TE.* The opposite tendency constituted a *positive TE.* The magnitude of the TE was obtained from the number of categories shifted from the comparative judgment for the AB order to that for the BA order. The interpolated pair TE was computed separately for the high-interpolation and low-interpolation pairs. The effect of the interpolation was assessed by the difference between these two TE’s.

In Exps. III and IV, the point of subjective equality (PSE) was computed from a regression line drawn for the category judgments over the number of dots which cross the category of “equal”. The constant TE was the number of dots at which the regression line meets the category of “equal” minus the number of dots on the standard stimulus, 53, (TE=PSE-S). When the PSE was larger than the standard, it was a positive TE, the opposite trend constituted a negative TE. The interpolated constant TE was also computed in the same way. The effect of the interpolation was assessed by comparing the PSE attained with high interpolation to the PSE obtained with low interpolation.

Each slide was presented on the screen for five seconds. The time interval between the two paired pictures was six seconds, which was “unfilled” in Exps. I and III and “filled” with the interpolated stimulus in Exps. II and IV. The interpair interval was 10 seconds, during which the subjects made their judgments on the answer form.

The *Subjects* who have participated in Exp. 2 thus far are 71 prelingually deaf students from the Indiana School for the Deaf (ages 13 to 20 yrs.) and 24 normal hearing students (ages 13 to 14 yrs.) from the Hometown Public School, Oak Lawn, Ill. The experiments with older hearing subjects will be conducted in the fall of 1969.

Results

Exp. 1. The effect of numerosity size of the pair on the appearance of the pair TE is summarized in *Table 10.* The deaf Ss were grouped into three age levels, 13-14 yrs., 15-17 yrs., and 18-20 yrs. In all three age levels, it is clearly demonstrated that the TE is a function of the number of dots in the pairs and the TE tends to be more positive (first stimulus has more dots) or more negative (second, more dots) as the number of dots in each pair increases or decreases. The indifferent or turning point where the direction of the TE becomes negative from positive is about 50 dots.

The pair TEs of the 13 to 14 year-old deaf Ss, compared to those of the corresponding hearing Ss, show a steeper regression over the number of dots. That is, the deaf children's judgments tend to be shifted slightly more by the presentation order of the pair.

It appears that the impression of the numerosity created by the first stimulus is attenuated during the intrapair interval in both younger and older deaf Ss and hearing Ss. Accordingly, their comparative judgment is more influenced by the absolute level of the numerosity impression of the second stimulus, which is current and vivid than that of the first stimulus. Whether this tendency is found to be more characteristic of the deaf than hearing subjects, as the data of the 13 to 14 year groups suggest, cannot be ascertained until the testing of older hearing subjects is completed.

Exp. II. The interpolation effect on the pair TE is summarized in *Table 11.* When a pair was interpolated with a larger number of dots (high-interpolation) than the pair had, the TE tends to shift in a positive direction. For a pair interpolated with a smaller number of dots than the pair, (low-interpolation), the TE shifts in a negative direction. That is, for all but a few exceptions, the TEs with high-interpolations are more positive or less negative than the TEs with low-interpolations. The overall interpolation effect for the deaf Ss ranges from .65 to 1.02 category points, but this effect for the 13 to 14 year hearing Ss (1.12) is almost twice that of their deaf counterparts.

If the adaptation-level theory or assimilation theory is applied to these data, it can be said that the impression of the first slide's numerosity was pulled by, or assimilated to, the larger or smaller numerosity impression of the interpolated stimulus during the intrapair interval, causing the above TE shift. Whether this interpolation effect is larger or smaller in the deaf than the hearing is, therefore, a crucial question for the understanding of these processes, and will be investigated when data from older hearing groups are collected. It is, however, clear that the averaging or assimilation process assumed in temporal information processing is found in both deaf and hearing Ss.

Exp. III. The constant TE from the method of constant stimuli are summarized in *Table 12.* When the standard stimulus was presented first and the variable stimulus second (S-V), the point of subjective equality (PSE) obtained by the graphic method becomes consistently smaller than the standard (53 dots). The TE ranges from -2.5 to -5.5 dots. When the standard stimulus was presented second (V-S), the TE tends to be negligible or positive. These results, i.e., the effect of the presentation order on judgmental bias, are on the whole in agreement with the pair TEs observed in Exp. I and the theoretical postulation advanced for the pair TE is also quite adequate for the constant TE. At the age level 13 to 14 years, the deaf group's constant TEs resulting from the S-V and V-S presentation orders, -5.5 and 5.5 respectively, are substantially larger than the corresponding TEs of the hearing controls, -2.8 and 0, respectively. This is again in agreement with the pair TE result.

Exp. IV. The data analysis of the interpolation effect on constant TE has not been done yet.

Exp. 3. Optional discrimination-shift learning in deaf and hearing children

Purpose

Previous studies show that older children and adults learn a reversal shift in the second task (which involves the reversal of a response to a relevant dimension of the first task) more readily than an extra-dimensional shift (which requires a response to an irrelevant dimension of the first task). The contrary is true for young children (e.g., Kendler and Kendler, 1962; Tighe and Tighe, 1966). This developmental transition from the extra-dimensional shift (EDS) to the reversal shift (RS) which occurs somewhere between the ages of five and seven is thought to be correlated with the swift and decisive change of language development of the child at this period (e.g., Lenneberg, 1957). It can be, therefore, assumed that if the deaf's transition from EDS to RS is found to be at a later age than his hearing controls, the impoverished language system can be considered as a crucial determinant. Thus, the covert mediational process involved would be verbal in nature as Kendler and Kendler (1962) hypothesized. If, on the other hand, the deaf show no development delay in this shift task, then the perceptual mediation (Tighe and Tighe, 1966) which analyzes the stimulus into distinguishable features, or the attentional mediation (House and Zeaman, 1962) which assumes an enhancement of response probability due to the stimulus arrangement, may be all that is involved.

Our second interest was in comparing the deaf children's learning patterns with those of normal hearing children in their approach or tactics, kind of errors made, speed of learning and task difficulty. Our third concern was on the reliability of the RS or EDS and the transfer effect, introducing two discrimination tasks for the shift learning.

Method

The *Subjects* were 48 deaf (22 girls and 26 boys) and 46 hearing children (24 girls and 22 boys), ages four, five, eight, and nine years. The deaf Ss came from the Indiana State School for the Deaf in Indianapolis, Indiana, and Michael Reese Hospital in Chicago. The normal controls were either selected at random from the Oakton School, Evanston, Illinois, or were the siblings of the deaf children who were attending the preschool deaf class at Michael Reese Hospital.

The mean IQ scores (on various tests) for the deaf and hearing Ss were 103 (range, 83-134) and 111 (range, 94-130), respectively. Eight of the deaf and six of the normal Ss failed the initial learning and they were eliminated for this reason. The Ss were eliminated if they did not attain the set criterion within 74 trials.

In order to improve the experimental control, such as the presentation of stimuli, reinforcement procedure, and recording of the responses, an automated procedure was used. The stimuli were presented by means of a stimulus programmer developed by MTA, Inc., Milwaukee, Wisconsin. Through a candy dispenser connected to the programmer by relay circuits, an M&M candy was dispensed simultaneously at the child's correct response.

The first discrimination learning: Chromatic color and *form dimensions.* There were three series: the initial learning, optional learning, and test series. In the *initial learning* series, the Ss learned to discriminate one of the following as the correct stimulus: Red (R), Blue (B), Circle (C), or Triangle (T), each about 1.1 x 1.1 inches in size. There were two different pairs of stimuli: R-C vs. B-T and B-C vs. R-T, as shown in Fig. 1. One of those two pairs in a prearranged sequence made from Fellows' table (1967) was presented on each trial. The S was told to choose one of the two stimuli by pressing the window panel (1.8 x 2.5 inches) which was over the stimulus. He was told that he would get an M&M candy every time he made a correct response, but an M&M will be taken away everytime he made an incorrect response.

When the S reached the criterion, i.e., nine correct responses out of 10 consecutive trials, the *optional learning* task was presented. In this series, only one pair of stimuli was used, and the reinforcement pattern was reversed. That is, since both stimulus dimensions, color and form, became relevant during the optional shift, the S had three possible choices for responding at this stage. For example (see Fig. 1), a child whose correct stimulus was R in the initial learning, now had the option of responding, (1) to the previously negative stimulus, B, (2) to the stimulus of a previously irrelevant dimension, T, or (3) to both stimulus values, B-T. The Ss were trained to the same criterion of nine correct out of 10 consecutive trials.

The third stage, the *test series,* was presented right after the Ss attained the criterion on the optional shift. In this series, the pair which was used in the initial learning, but was not used in the optional series, was reintroduced as the test stimuli, along with the pair used in the optional shift learning. The presentation order of these two pairs was also randomized following Fellows' table (1967). Each pair was presented 12 times. For the test pair, either member of the pair was rewarded.

The S's response to this test pair was presumed to reveal the basis for the S's discrimination in the preceeding optional shift. For instance, if the S was responding to the color dimension, he would consistently chose B-T and B-C (test pair). If his hypothesis was the form dimension, he would consistently chose B-T and R-T (test pair). If the basis of response in the optional shift was proved to be the same dimension as that of the initial learning series, e.g., both color, it was a RS. If the dimension in the optional series was different from that of the initial series, e.g., from color to form, it was an EDS. When the S made his responses nine out of 12 test trials on the basis of the same dimension or the different dimension, he was classifed as a RS shifter or EDS shifter, respectively. If the S made fewer than nine out of 12 responses to either member of the test pair, he was classified as an inconsistent shifter (IS).

The second discrimination learning: Achromatic color or brightness and form. This second learning task followed the same procedure as the first learning task, using Gray (G) and Black (Bl) as the brightness dimension and Rectangle (Rt) and Diamond (D) as the form dimension (See Fig. 1).

Results

Number of Trials: Table 13 presents the results. Owing to the fact that variances were heterogeneous and distributions were skewed, the median number of trials to the criterion and the mean and standard deviation of the square-root transformation ($\sqrt{X + .5}$) of the scores were computed.

The median number of trials suggests some differences among the groups in the initial learning of the first task, but no significant differences in the series that follow. An analysis of variance was, therefore, performed on the transformed scores of this initial learning of the first task, using a 2x2x2 factorial arrangement (deaf and hearing x old and young x color and form). The learning rate of the deaf is not different from that of the hearing, F (1.72) = 1.14, and the difference between the color and form dimensions is also not significant, F (1.72) = .002. The age difference is, however, significant, F (1.72) = 3.99, $p<.05$. No significant interaction effects are found.

Since the median number of trials includes the criterion trials, i.e., nine correct responses out of 10 test trials, it is obvious that the Ss, even the four to five year groups, learn the discrimination tasks within a few trials, once they have learned the initial discrimination learning of the first task. This transfer effect is indeed impressive in view of the fact that the brightness and form cues used in the second task are supposed to be more difficult than those in the first task.

Modes of Shift. Table 13 also includes the percentage of subjects who demonstrate the RS. Approximately 80 percent of the young groups and 92 percent of the old groups are the RS shifters. This slight difference between the two age levels is not significant. A chi-square test applied to a 2x2 (deaf and hearing x young and old) contingency table shows no significant difference, X^2 (1) = .12.

The learning rate, transfer effect, and predominant trend of the RS in the present discrimination tasks are therefore quite comparable between the deaf and hearing subjects. Since implicit verbal mediation in discrimination learning is the least we can expect from the deaf, especially from our young deaf children, the present data are more in line with the dimensional attention model of Zeaman and House (1963) and perceptual feature theory of Tighe and Tighe (1966) than the verbal mediation hypothesis of Kendler and Kendler (1962).

The 80 percent of RS responses among the young children in two different tasks is considerable higher than about 50 percent RS between ages five and seven that Kendler and Kendler (1959) have found in a comparable task. The automated programming which makes the stimulus presentation and reinforcement contingency instant with no time delay, and possibly the indirect personal contact between the subject and the experimenter might have facilitated the learning and RS trend.

Response Pattern Analysis: Analysis of response patterns, including the data from the Ss who failed to learn the initial learning series, is currently in progress.

Exp. 4. Scaling of numerosity by deaf and hearing subjects

Purpose

Scaling is an associative binding of schematics to empirics, where numbers are assigned to aspects of objects or events according to specified rules (Stevens, 1968). In this experiment, our major interest was in describing how deaf and hearing Ss sorted the number of dots into classes and ordered them in asymmetric relations when the constraints imposed were the rules of the category and magnitude scales. In the category scale, the subject was required to classify the number of dots into nine ordered categories (interval scale), and in the magnitude scale, he was required to estimate the actual number of dots (ratio scale). The ability to code these experiential units and schemata in terms of the number system is essential for higher mental operations. The investigators in the area of concept attainment, with the exception of Piaget (1952) and some others (Bruner, 1966), have paid little attention to this associative binding. The scale forms achieved and response patterns revealed in these scalings may depict the characteristics of high-order organization of events by the deaf and hearing Ss.

Method

Stimuli consisted of slides containing clusters of black dots on white background. The 16 dot-slides were selected from the stimulus pool of Exp. 2 (See *Table 14).* These 16 dot-slides were presented in a random order and were shown twice without interruption. Each slide was shown for five seconds by a projector, and the interval between the individual slides was 10 seconds during which the S was asked to write or mark his response on the answer forms.

For *category scale,* the S was instructed to assign one of the nine ordered response categories, ranging from "very, very many (9)" to "very, very few (1)" to each slide projected on a screen on the basis of his impression of number of dots. Written instructions were also given. Before the experiment, the Ss were given an opportunity to familiarize themselves with the actual number of dots. It is interesting to note that the magnitude estimation of the youngest (13 to 14 year) deaf group deviates least from the actual number of dots, and it is also contrasted with the marked underestimation of their hearing counterparts. The reliability of the magnitude estimation in terms of the agreement between the first and second estimations is also fairly high.

The relation between the category scale and the magnitude scale is nonlinear, although the same numerosity stimuli were scaled by the same subjects. It is approximately logarithmic in all the groups, as found in other prothetic continua (Stevens, 1957). The numerosity scalings of the deaf and hearing Ss, both the category and magnitude scalings, seem to be well developed by the ages of 13 to 14 years and demonstrate the features of prothetic continua. Further analysis of the data, including the response analysis, will be made upon the completion of data collection with older hearing Ss.

Summary

Four experiments were conducted in order to clarify cognitive processes of the deaf. The preliminary findings of these experiments are as follows:

Exp. 1 Organizational characteristics of free recall in deaf and hearing subjects.

The mnemonic organization in memorization of the categorized and non-categorized word-lists was examined by means of Bousfield's clustering and Tulving's subjective-organization measures. The deaf Ss rely on these organizational strategies much less than the hearing Ss do, although their recall performance was not markedly inferior to that of the hearing Ss.

Exp. 2 Judgmental bias of deaf and hearing subjects in successive pair comparisons of numerosity.

The judgmental bias (time-error) due to the presentation order of the paired numerosity stimuli was examined, first, as a function of the size of numerosity, and second, as a function of interpolation of the pair by a third numerosity stimulus. The young deaf children, compared with their hearing counterparts, tended to show a greater judgmental bias and smaller interpolation effect. The data collection with older hearing Ss has not been completed yet.

Exp. 3. Optional discrimination-shift learning in deaf and hearing children.

After an initial learning, the child was given an opportunity to reverse his previously learned cue along the same dimension (RS) or to shift to a cue of another dimension (EDS). All the Ss, including the four to five year old deaf and hearing, showed predominantly RS shift. The mediational process involved therefore seems to be of a more attentional or perceptual nature than verbal. The transfer effect was also marked in all groups. The stimulus and reward contingencies programmed in our automated procedure might have facilitated their discrimination learning.

Exp. 4. Scaling of numerosity by deaf and hearing subjects.

The scaling behaviors of the subjects were assessed by means of the category scaling and magnitude scaling procedures, using 16 numerosity stimuli. The ability to assign the rating categories, and proportional numbers according to their impression of numerosity is well developed in the deaf subjects, even in the 13 to 14 year old deaf children. The data collection for the older hearing Ss is in progress.

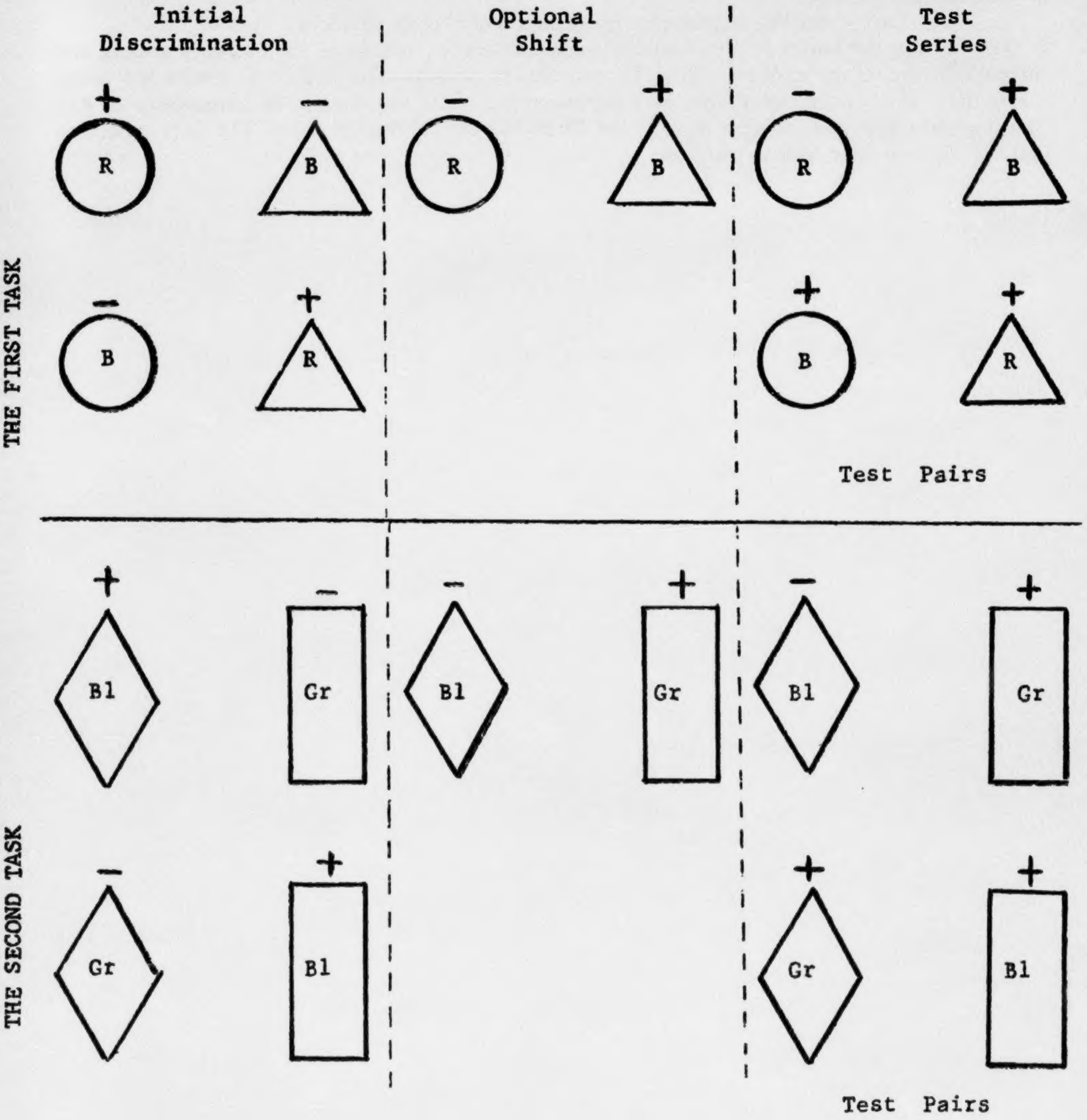
Initial Discrimination
Optional Shift
Test Series
THE FIRST TASK
+
R
−
B
−
R
+
B
−
R
+
B
−
B
+
R
+
B
+
R
Test Pairs
THE SECOND TASK
+
Bl
−
Gr
−
Bl
+
Gr
−
Bl
+
Gr
−
Gr
+
Bl
+
Gr
+
Bl
Test Pairs

Fig. 1. Illustration of the experimental procedure showing one of the reinforcement patterns used for the first and second shift-tasks, respectively.

TABLE 8

MEAN TRIALS TO CRITERIA OF 80 PERCENT AND 90 PERCENT RECALLS OF TWO WORD LISTS

	CATEGORIZED LIST				MIXED LIST			
	80%		90%		80%		90%	
GROUP	Deaf N-18	Hearing N-18	Deaf	Hearing	Deaf	Hearing	Deaf	Hearing
18–20 yr.	2.5	2.4	4.2	3.6	2.2	1.8	8.0	3.6
13–14 yr.	3.9	2.1	8.4	4.8	4.4	2.8	12.6	7.0

TABLE 9

AVERAGE CLUSTERING, SCR, AND AVERAGE SUBJECTIVE-ORGANIZATION, ITR(2), OF LAST EIGHT TRIALS

	CLUSTERING, SCR (CATEGORIZED LIST) E(SCR) = 3.0*		SUBJECTIVE ORGANIZATION, ITR(2) (MIXED LIST) E((ITR)2) = .13*	
GROUP	Deaf N-18	Hearing N-18	Deaf	Hearing
18–20 yr.	5.6	7.2	2.6	4.8
13–14 yr.	7.4	8.9	2.9	2.8

*The scores expected by chance.

TABLE 10

NUMBERS OF DOTS IN EACH STIMULUS PAIR, PRESENTATION ORDER OF PAIRS, AND TIME-ERRORS IN THREE AGE GROUPS

STIMULUS			TIME-ERROR			
Presentation order	No. of dots in each pair		Deaf Ss			Hearing
	A	B	13-14 yr. N=20	15-17 yr. N=20	18-20 yr. N=20	13-14 yr. N=20 N=20
6	22	24	1.6	.9	1.3	.6
20	29	24	1.2	0	.3	.6
1	24	32	.2	.2	- .4	.2
16	29	32	1.4	1.0	.9	.5
18	40	29	.8	.5	.4	.4
14	40	32	1.1	1.1	- .1	.2
9	40	36	.4	.4	.1	.6
3	35	44	.1	-.2	- .4	-.2
12	36	44	0	0	.5	-.1
11	58	53	.2	0	0	-.1
8	64	53	.1	-.6	-1.2	-.3
2	70	53	-1.2	-.5	-1.7	-.3
5	58	70	-1.4	-2 .1	-1.5	-1.5
4	64	70	- .5	- .5	- .6	.3
15	64	85	- .4	-1.6	-1.5	-1.2
19	85	77	-1.6	-1.2	-1.6	-.4
10	77	93	-1.6	-1.4	-1.1	-.9
7	102	77	-2.4	-2.0	-2.0	-1.0
17	85	102	-2.0	-1.1	-1.2	-1.0
13	102	93	-1.3	-1.1	-1.6	-.6

TABLE 11

NUMBER OF DOTS IN EACH STIMULUS PAIR AND IN HIGH AND LOW INTERPOLATION STIMULUS, PRESENTATION ORDER OF PAIRS, AND INTERPOLATED TIME-ERRORS IN THREE AGE GROUPS

	STIMULUS				TIME-ERROR WITH INTERPOLATION							
	NUMBER OF DOTS ON STIMULUS				DEAF Ss						HEARING	
	Pair		Inter-polation		13-14 yr. N=20		15-17 yr. N=20		18-20 yr. N=20		13-14 yr. N=20	
PRESEN-TATION ORDER	A	B	High	Low	High	Low	High	Low	High	Low	High	Low
5	29	35	44	24	.8	.7	.1	-.7	.9	0	.8	-.2
4	40	32	53	24	.2	0	-.5	-.6	1.1	-.1	-.3	-.8
3	58	53	70	44	.1	-.9	-.8	-1.1	0	-.4	-.4	-.4
1	64	70	85	53	-.2	-.7	-.2	-.9	-.1	-1.2	.4	-1.4
6	85	77	102	64	-.7	-1.5	-.6	-1.6	-1.1	-1.8	-.3	-1.2
2	77	93	112	64	-.9	-2.2	-.8	-2.0	-.7	-2.5	.2	-2.3
			AVERAGE		.12	-.77	-.47	-1.15	.02	-1.00	.07	-1.05
			HIGH – LOW		.65		.68		1.02		1.12	

TABLE 12

NUMBER OF DOTS ON STANDARD (S) AND VARIABLE (V) STIMULI AND AVERAGE CATEGORY SCALE VALUES FOR VARIABLE STIMULI WHEN THE STANDARD PAIRS GIVEN FIRST AND SECOND, RESPECTIVELY

STIMULUS			AVERAGE CATEGORY SCALE VALUE FOR V							
PRESENTATION ORDER	NO. OF DOTS PAIR		DEAF SUBJECTS						HEARING	
			13-14 yr. N=20		15-17 yr. N=20		18-20 yr. N=20		13-14 yr. N=20	
	S	V	S-V	V-S	S-V	V-S	S-V	V-S	S-V	V-S
2	53	36	-1.1	-.6	-1.6	-1.0	-1.4	-1.0	-1.5	-1.5
1	53	44	.2	-.2	- .5	-1.0	- .4	- .6	- .5	- .6
5	53	53	- .1	-.4	.3	0	.2	- .3	0	- .3
3	53	64	1.0	.1	1.1	.1	1.0	.9	1.0	.6
4	53	77	1.7	.2	1.9	.6	1.9	1.0	2.0	1.2
PSE (No. of dots)			47.5	58.5	50.5	56.0	49.5	51.5	50.2	53.0
TE = PSE - S			-5.5	5.5	-2.5	3.0	-3.5	-1.5	-2.8	0

TABLE 13

MEDIAN AND TRANSFORMED MEAN AND STANDARD DEVIATION OF TRIALS TO CRITERION AND PERCENTAGE OF REVERSAL SHIFT

				INITIAL			OPTIONAL		RS
Age	Group	N*	Mdn	M	(SD)	Mdn	M	(SD)	(%)
First Task									
Color: Red and Blue									
8-9	Hearing	10	14.0	4.3	(1.0)	10.5	3.3	(.1)	70
	Deaf	10	13.5	4.9	(1.9)	10.0	3.6	(.5)	100
Form: Circle and Triangle									
	Hearing	10	17.5	4.1	(.6)	10.0	3.4	(.2)	100
	Deaf	10	15.5	4.7	(1.2)	10.0	3.5	(.2)	80
Color: Red and Blue									
4-5	Hearing	10	17.5	5.3	(2.1)	14.0	3.8	(.5)	70
	Deaf	10	19.0	4.8	(1.1)	11.5	3.8	(.8)	90
Form: Circle and Triangle									
	Hearing	10	24.0	4.9	(1.7)	13.0	3.8	(.6)	90
	Deaf	10	34.0	5.7	(1.3)	14.0	3.9	(.9)	70
Second Task									
Brightness: Gray and Black									
8-9	Hearing	(10)	11.0	3.9	(1.4)	10.0	3.3	(.1)	90
	Deaf	(10)	10.5	3.7	(1.0)	11.0	3.3	(.1)	100
Form: Diamond and Rectangle									
	Hearing	(10)	10.5	3.9	(1.4)	10.0	3.3	(.1)	100
	Deaf	(10)	10.5	3.3	(.1)	11.0	3.4	(.2)	100
Brightness: Gray and Black									
4-5	Hearing	(10)	11.0	3.8	(1.2)	10.0	3.5	(.4)	80
	Deaf	(10)	11.5	4.6	(2.1)	11.0	3.9	(.9)	60
Form: Diamond and Rectangle									
	Hearing	(10)	10.0	3.3	(.2)	10.5	3.6	(.6)	90
	Deaf	(10)	11.0	3.5	(.5)	11.0	3.7	(.5)	90

* Same Ss participated in first and second task.

TABLE 14

NUMBER OF DOTS ON STIMULI AND AVERAGE CATEGORY SCALE VALUES

NO. OF DOTS ON STIMULUS	DEAF Ss				HEAR.
	13-14 yr.	15-16 yr.	17-18 yr.	19-20 yr.	13-14 yr.
	N = 25	N=13	N=22	N=13	N=25
22	1.6	1.3	1.5	1.4	1.4
24	2.1	2.6	2.0	2.0	2.0
29	3.2	2.4	2.6	2.2	2.6
32	3.0	2.6	3.0	2.8	2.6
36	3.5	3.6	3.0	3.5	3.4
40	3.9	3.8	3.4	3.8	3.7
44	4.4	4.2	4.4	4.4	4.3
53	5.6	5.4	5.8	6.5	5.9
58	5.6	5.1	5.7	5.8	5.5
64	6.9	6.0	6.7	6.9	6.4
70	7.1	6.0	6.4	6.7	6.5
77	7.5	7.4	7.8	8.0	8.1
85	7.6	8.1	8.0	8.1	8.0
93	8.6	7.8	8.5	8.5	8.7
102	8.4	8.5	8.7	8.8	8.7
112	8.5	8.8	8.6	8.5	8.8

TABLE 15

NUMBER OF DOTS ON STIMULI AND AVERAGE MAGNITUDE SCALE VALUES

NO. OF DOTS ON STIMULUS	DEAF Ss				HEAR.
	13- 14 yr.	15- 16 yr.	17- 18 yr.	19- 20 yr.	13- 14 yr.
	N=23	N=14	N=20	N=13	N=26
22	16.0	17.5	14.7	18.0	16.5
24	18.9	17.1	15.5	19.5	16.1
29	23.3	22.3	22.0	23.8	19.4
32	22.7	22.2	19.6	23.4	21.4
36	29.5	27.2	24.7	27.9	23.8
40	29.7	28.0	27.0	31.9	26.1
44	31.6	30.0	25.9	33.1	27.1
53	43.8	38.8	38.3	41.7	37.3
58	48.2	39.9	38.0	47.0	36.9
64	50.3	53.7	45.4	51.6	44.2
70	51.3	49.2	50.1	51.8	45.4
77	58.8	50.5	57.5	61.6	48.4
85	86.9	78.5	66.6	69.8	59.8
93	90.0	73.4	82.6	72.4	65.0
102	98.0	79.5	73.3	76.7	68.9
112	105.0	91.1	85.5	87.8	80.6

15. EEG Changes Under Differing Auditory Stimulations

by Duilio Giannitrapani, Ph.D.

THE END of the 19th century was particularly important in the development of the ideas concerning the functional organization of the cortex. The localizationists found support in the findings of Broca and Wernicke concerning speech, Fritsch and Hitzig concerning motion, and Munk concerning vision. The finding of Goltz and the heirarchic principles of Jackson clearly opposed these views.

Today, while findings supporting a strict localization of cortical functions are not expected, the opposite attitude is difficult to hold. Several reasons can be adduced: 1) thoughts cannot easily rally around a nebulous concept of non-localization, 2) research in humans is limited by the shortcomings of clinical investigations which have allowed for very little progress since the 19th century, and 3) the easily obtainable abstractions concerning "functions" in man do not seem to have a close parallel with the physiological organization of brain structures.

An analysis of cortical impairment of auditory functions in the deaf cannot be undertaken without a knowledge of the distribution of involvement of cortical areas for the normal performance of such functions. The processing of auditory information is quite complex and includes, beyond the obvious receptive function, some of the highest functions of which man is capable. Furthermore, the cortical correlates of these functions are not necessarily distinguishable from the cortical correlates of thought processes generated as a result of the auditory stimulation.

Modern technology permits exploration of cortical activity through computer analysis of electrical activity obtained from the scalp. One can study through spectrum analysis both the relative amplitude of different frequencies in various areas of the brain and the relationship of this activity (Brazier & Casby, 1954, Walter *et al* 1966). A method has thus become available for studying cortical functions through changes in the activity or changes in the relationship between various brain areas under different psychological states.

To study auditory functions through these changes, recordings were obtained while normal hearing individuals were listening to auditory stimuli varying in complexity. Spectrum analysis and phase angle analysis of the EEG permitted studying to what degree and in what manner the different cortical areas were involved, as well as in what manner the relationships between cortical areas changes under different conditions.

Method and Procedure

A sample of 32 young males (arbitrarily selected to be between 11 and 14 years of age) was given an experimental EEG examination consisting of five conditions all performed while the subject was lying on a bed with eyes closed: 1) awake resting, 2) listening to white noise, 3) listening to music (a segment of Tchaikovsky's "Marche Miniature"), 4) listening to verbal contextual material (a segment of Mark Twain's *Tom Sawyer)* and 5) awake resting. Resting periods were recorded at the beginning and end of the experiment to provide a measure of the variability of the resting condition.

The recording was obtained from 16 monopolar electrodes as follows: a temporal line of electrodes consisting of 10 electrodes according to the 10-20 system and three sets of two electrodes for each of the three coronal planes. During the entire session the 16 channel EEG was recorded on 24 inch paper, and during the four conditions these 16 outputs were digitized at the rate of 128 12-bit conversions/sec. and recorded on computer tape in a series of eight eight-sec. records.

One eight-sec. record for each condition, free from artifacts, was selected for computer processing. Computer processing consisted of spectrum and phase angle analysis from one to 33 cps in 16 bands, two cps wide, via computer program BMD X 92 (Dixon and Massey, 1968) modified at this laboratory.

All autospectra and phase angle values were normalized (Clusin *et al.* 1969) to equalize interchannel discrepancies numerically. The magnitudes of the autospectra showed disproportionately large values at the lower frequencies. The autospectra, therefore, were transformed into their root mean square values and then into their log equivalents. These scores will be referred to as log amplitude scores. Several repeated measurement factorial analyses of variance were performed on the log amplitude and phase angle scores.

As indicated earlier, two resting conditions were used, one at the beginning and one at the end of the experiment. This procedure provided a measure of the variability of the resting condition. In interpreting the differences between the auditory and resting conditions, significance was accepted only if both resting conditions were significantly different from the auditory in the analysis of variance.

Results

Log amplitude

In the high frequency bands of the prefrontal areas there is a bilateral decrease in time which is more pronounced on the right side. In the occipital areas a bilateral increase is observed in the slow frequencies, up to and including the 11 cps band. An increase in the alpha rhythm (nine cps in this sample) is evident in all areas on the left side, but is most prominent in the prefrontal and lateral-frontal areas bilaterally. The other significant changes involve individual frequency bands and seem to be less systematic.

Differences between resting and the three auditory conditions took into account the changes observed in the resting conditions. The resting condition used in each frequency was that which gave the smaller difference from the given auditory condition. If the score of the auditory condition fell between that of the two resting conditions the difference score shown on the graph is zero.

With noise, an increase occurs in fast activity in the prefrontal and lateral frontal and bilaterally in the temporal areas primarily on the right side. A small decrease in the lower frequencies is noted in most areas.

While listening to music, the temporal increase in fast activity is not as great as that observed in the noise condition and it is now stronger on the left side. The decrease in the lower frequencies observed in the noise condition is also present here.

The differences for voice are an increase in fast activity in the temporal and prefrontal areas, bilaterally, while the decrease in the lower frequencies observed in the noise and music conditions is not present here.

Phase angle. Of the 36 anterior-posterior and translateral comparisons tested only five showed significant changes in the phase relationships between the auditory and the resting conditions. These were: prefrontal to occipital, bilaterally; central to occipital, bilaterally; and left temporal to right temporal. *Table 16* shows, for these comparisons, the phase angle means obtained for the three auditory conditions and for the initial and final resting conditions.

Significant differences between a given auditory condition and the most stringent resting condition (same procedure used in autospectra) are computed from this table. It is noted that while the noise condition elicits insignificant changes in most frequency bands, the music and the voice conditions are quite selective in their phase angle changes. In the two latter conditions the changes indicate a phase shift toward right temporal leading in the low beta range but in slightly different frequencies.

Among the significant differences in the phase shifts for the prefrontal to occipital areas bilaterally, the most interesting is on the left side in the eight cps band for noise and voice. For the noise condition the difference from resting is expressed as a significant increase in anterior leading, while the voice condition shows a significant increase in posterior leading.

For noise, the only significant phase angle differences are in the prefrontal to occipital comparisons with anterior leading. Posterior leading is shown by the 16 cps band. Since 16 cps is the first harmonic of eight cps the posterior leading may be an artifact.

For music, anterior leading in the long longitudinal comparisons is observed again in the 24 cps band, now bilaterally. In addition right temporal leading is observed, as well as central leading in the central to occipital comparison.

For voice, all anterior leading in the long longitudinal comparisons disappear while an eight cps posterior leading appears (opposite from the eight cps leading occurring for noise). In addition, right temporal leading occurs as for music, but in a slightly higher frequency (20 cps.)

Discussion

The results indicated changes in EEG activity in specified brain areas which correlated with auditory functions. The changes observed were far from being identical for the different auditory conditions even though there was considerable overlap, and they occurred in specific frequency bands, primarily in the beta region.

No attempt is made here to account for all the changes observed nor to postulate a mechanism underlying the frequency bands involved. This method of studying brain activity is still in its infancy and is expected to open new possibilities of understanding functions of cortical areas well beyond current clinical knowledge.

In a study of auditory activity temporal involvement is expected. Changes in temporal activity were observed in both log amplitude and phase angle data, but the results did not give a clear picture of lateralization of functions. In the log amplitude data, for instance, the voice conditions showed a bilaterally symmetrical increase in beta activity. This finding, in light of clinical evidence of left temporal speech function localization, would indicate that these amplitude changes are not representative of speech functions per se, but perhaps of bilateral auditory functions necessary for the binaural perception of speech.

In contrast to this, the temporal activity concurrent with noise and music shows lateralization, for reasons not presently understood.

In the temporal phase angle data it was hoped that leading would occur in opposite directions for music and voice, extrapolating from clinical findings (Milner 1965, Luria 1966), which indicated for the right handed person localization of speech on the left, and of music on the right, temporal areas. The significant leading activity for both voice and music, however, was on the right. This finding either does not support localization of music on the right side, or suggests that lagging activity is an indicator of the dominant ear, rather than of a specific function.

The other cortical areas showing large changes with audition are the prefrontal areas which show comparable bilateral changes in beta activity for noise and for voice, with smaller changes for music. These changes together with prefrontal to occipital changes in the phase angle data point to an active role of the prefrontal areas in processing auditory stimulation.

Luria (1966) describes frontal "dynamic" aphasia, a syndrome occurring with left frontal involvement in which there is an impairment in the intonation pattern of spontaneous speech. In the present experiment, there was no condition of speech produced by the subject, but it can be postulated that the same structures mediating the intonation pattern of spontaneous speech may be required for the appreciation of intonation patterns while listening to speech.

In the voice condition on the left side the leading activity is from the occipital area in the alpha band, while in the noise condition it reverses and leads from the prefrontal. The rest of the leading activity outside the voice condition is predominantly anterior in the beta frequencies. These same areas show a decrease in the low frequencies for noise and music paralleled by similar decrease in most other areas tested, but these changes may be generated by a decrease in eye movement. The reason that this decrease is not observable in the voice condition may be an indication that the reduction of eye movements which usually occurs when attending to a stimulus, does not take place when an 11-to-13-year old listens to an adventuresome tale such as Tom Sawyer.

The only other significant relationship found was in the music condition, where a unique left central to occipital change with occipital leading was observed. Luria (1966) speaks of a deficit in left parieto-occipital cases which is expressed as an "inability to carry out complex spatial synthesis". This is a difficulty in dealing with those language structures which express spatial and time relationships, a disorder related to acalculia. In the past it has been possible to detect functional impairment through an analysis of the patient's understanding of sentences and his dealing with number concepts.

In music however it is difficult to measure the deficit because it could only be detectable as a decreased appreciation of time relationships in a musical passage. This deficit is to be distinguished from a difficulty in the perception of time relationships, rhythm and pitch, which are clearly mediated in the auditory cortex of the temporal lobes.

In the music condition a left central to occipital change (with occipital leading) was observed. Arguing back from the data, it could be adduced that the central to occipital posterior leading is a correlate of the capacity for appreciating the relationships of the notes of a melody without which music loses its quality.

In conclusion, this method of investigation reveals that in certain areas, both within and without the auditory cortex, a great number of significant changes occur, while there are other areas in which the significant changes occur only in individual frequency bands. In terms of localization of functions, amplitude and phase angle data for the present seem to be the best indicators of the degree of involvement of an area in a given task. In the future it is hoped that given frequency bands can be attributed specific roles in the mediation of a given auditory process.

Summary

An investigation of the amplitude changes and phase angle relationships between 16 brain areas for frequencies from one to 34 cps was undertaken.

Besides a resting control, three auditory conditions were used, one unpatterned (white noise), a musical excerpt and a story. The three conditions showed some similarities in the patterning of the EEG data but also some distinctive features characteristic of each condition.

Noise was particularly characterized by left temporal increase in beta activity and anterior leading of alpha in the left prefrontal to occipital comparison.

Among the auditory conditions music was characterized by the least change in amplitude from resting and anterior leading in the left central to occipital comparison.

Voice was characterized by a bilateral increase of beta activity in the temporal areas and posterior leading of alpha in the left prefrontal to occipital comparison.

The findings indicate both the specificity and the generality of the mediation of auditory processes in the human brain.

TABLE 16

NORMALIZED PHASE ANGLE MEANS OF THE FIVE COMPARISONS WHICH SHOWED PHASE ANGLE DIFFERENCES SIGNIFICANTLY GREATER THAN ZERO.

LEFT PREFRONTAL TO OCCIPITAL

Frequencies	4	8	12	16	20	24	28	32
Resting I	-16	8	-7	16	18	-18	5	1
Noise	- 8	33**	8	-21*	11	10	-20*	-2
Music	- 2	14	23	-7	-0	13	-5	-16
Voice	3	-18	26*	22*	1	-8	-15	20*
Resting II	- 4	12	20	2	2	-9	-8	8

RIGHT PREFRONTAL TO OCCIPITAL

	4	8	12	16	20	24	28	32
	-11	1	13	-6	2	-25*	7	-8
	2	17	30*	1	4	27*	-13	3
	- 8	18	8	5	13	-2	-15	6
	6	-15	16	-26*	-9	-17	7	-11
	-11	31**	18	-8	-36**	37**	-2	-8

LEFT CENTRAL TO OCCIPITAL

Frequencies	4	8	12	16	20	24	28	32
Resting I	- 3	9	19	9	-7	1	-4	-10
Noise	- 1	8	34**	10	11	-8	3	14
Music	2	-3	29*	26*	-30**	-9	-16	6
Voice	-12	-5	14	22*	-2	20	6	1
Resting II	-2	16	25*	18	15	3	-0	-3

RIGHT CENTRAL TO OCCIPITAL

Frequencies	4	8	12	16	20	24	28	32
	- 3	-8	21	15	-3	-8	-2	-1
	-10	6	36**	14	2	11	1	-2
	- 1	7	26*	25*	-1	-1	-3	-4
	- 5	3	7	17	12	1	8	0
	4	24*	27*	19	24*	-4	4	-6

LEFT TEMPORAL TO RIGHT TEMPORAL

Frequencies	4	8	12	16	20	24	28	32
Resting I	-21*	14	13	19	32**	8	-1	-11
Noise	21*	3	-5	-0	-2	13	12	17
Music	-14	8	4	-4	9	10	12	-4
Voice	-5	15	13	14	-9	4	5	7
Resting II	6	21*	4	28**	15	34**	10	7

* = P < .05
** = P < .01

16. Electroencephlographic (EEG) Findings on Deaf Psychotic Patients

by Duilio Giannitrapani, Ph.D.

TWENTY-SIX SUBJECTS of the deaf study were administered a routine clinical electroencephalogram with 16 monopolar tracings as per Appendix 1. Some problems were encountered when attempting to communicate to the patient the essence of the routine and what was expected of him. Communication was established via an interpreter, but anxiety was often high and some of the patients did not understand, or found it difficult, to keep their eyes closed during the recording.

Routine clinical interpretation of the EEG tracings revealed a greater percentage of abnormalities in comparison with what would be expected from a normal population. Of the 26 subjects tested, 19 had abnormal EEGs. Of the 22 psychotic subjects, only six had normal EEGs. These normal records were among those given a psychiatric diagnosis of schizophrenia. Diffused slow activity was concentrated among the depressives (three out of five).

The abnormalities noted consisted primarily of excessive slow activity, depression of activity in the Temporal areas and sharp waves in the Parietal areas. While the Temporal-areas depression was either left, right or bilateral, the sharp waves of the parietal areas were either on the right side or bilateral. Very little true spiking activity was noted and seizure patterns were absent.

Profound deafness may occur as a result of a host of etiologies involving either central or peripheral lesions and with characteristic differences in the degree to which other structures are impaired. Peripheral lesions involving the cochlear nerve may be a result of otitis media, meningitis, skull fractures, otosclerosis, basal tumors, infections or degenerative diseases, among others. Central lesions include syphilis, multiple sclerosis, congenital defects, brain tumors and degenerative diseases of the brain and blood vessels.

From the foregoing list it becomes apparent that (1) the degree and location of damage to cerebral structures even within a given process varies greatly and (2) only a small portion of the damage is detectable by scalp recordings.

Derbyshire *el al.* (1956) analyzed the EEG response pathway involved in audition and re-emphasized the nonspecific nature of the cortical responses. Clinically, Gibbs and Gibbs (1964) in their run of 396 patients with deaf symptomatology, concluded that there were no clear relationships between the EEG and hearing disorders. They also found that while deafness and athetosis were clinically associated, the EEG could not discriminate between them.

Another approach in the utilization of EEG for the study of brain structures involved in audition is the estimation of hearing threshold by EEG. Perl *el al.* (1953) concluded that the EEG changes described following auditory stimulation were nonspecific in that they could be induced by stimuli other than sounds.

In conclusion, for this group of deaf psychotics the diversity of the abnormalities noted and the variety of the loci in which they were observed is great. These abnormalities seem to be due for the most part to reasons which may be directly related to the process involved in the deafness, but only indirectly related to the deafness per se.

For 27 cases of adult deafness an analysis was made of the relationships among the quantities of EEG abnormalities of neurological signs of brain damage and of "organicity" in psychological tests. The agreement among these measures was not significant.

The electrode placement used in this laboratory is a modification of the 10/20 system.

The temporal line of electrodes is identical to that of the 10/20 system, i.e. Fp 1, Fp2, F7, F8, T3, T4, T5, T6, 01, 02. For the three coronal planes, however, there are only two additional electrodes rather than three as per the 10/20 system. The space between the electrodes of the temporal line for each coronal plane is trisected rather than quadrisected as in the 10/20 system.

The resultant array is constituted by 16 electrodes that can all be observed in one monopolar montage in a 16 channel electroencephalograph.

TABLE 17

SUMMARY – DEAF STUDY

	NORMAL	EXCESSIVE FAST F T P O	EXCESSIVE SLOW F T P O	MIXED F T P O	DEPRESSION OF ACTIVITY F T P O	SHARP WAVES F T P O	SPIKES F T P O	SEIZURES
Schizophrenics N=16	6		3344	2	21	1233	2	
Depressives N=5		1111	3333	1111	11	1111		
Postpartum N=1		1	1111			1 1		
Passive Dep. Psn. N=2			1		2			
Anxiety React. N=1	1							
Normal N=1		11	1111		11	1 1		
Total	7	2211	8999	1131	162	4364	2	

17. Summary

by Roy R. Grinker, Sr., M.D.

IT IS DIFFICULT to summarize work extending over three years especially when most of the results are descriptive rather than statistical. Yet at this stage of our knowledge of the psychological and psychiatric processes in the deaf, *hypotheses* are more important than small restricted research designs.

Our initial goals were to gain experience and knowledge needed to provide *therapy* to deaf persons who are mentally ill, to *train* personnel for services to the deaf, to *activate therapeutic services* for deaf patients erroneously kept for custodial care in mental hospitals, and to *develop hypotheses* regarding deafness as a variable in human behavior; leading naturally to ideas about *prevention* and *rehabilitation.* That we could not achieve all these goals is not surprising, but at least a beginning was made.

Although we could not determine how many deaf persons are cached in the state hospitals, indications are that they are numerous enough to warrant a high priority for special services. The number of handicapped deaf in the community is also concealed because of shame and ignorance on the part of families and patients. Thus, *case-finding is an important social responsibility.*

As part of the many etiological factors resulting in deafness, such as meningitis, rubella, Rh factor etc. as well as genetic deviance, *organic brain damage* is a frequent accompaniment of deafness. This ranges from severe gross, neurologically obvious, defects to subtle "soft" signs. Neurological, EEG and psychological test findings all indicate the presence of brain damage but do not correlate well as to extent. In our sample, IQ tests revealed that we were studying persons who were average to dull normal, yet a large percent had remained *uneducated* despite the fact that problem-solving by deaf children is as efficient as normal controls.

In deaf patients the *precipitation* of psychiatric illness can in 58 percent be related to (1) *separation* or loss or threat of loss of dependency on persons or institutions, or (2) *physical injury.* Approximately 37 percent belong to the first category and 21 percent to the second. Each of these categories carry over into later personality disturbances evident clearly in behavioral characteristics. About 42 percent had no specific precipitating incidence; most of these were *chronic schizophrenics.* Two-thirds of our patients achieved only long-standing marginal adjustment manifested in ineffective social functioning, symbiotic and/or hostile dependency, and lack of communication with irrational massive denial of deafness.

After a long stay in a state hospital most of these deaf have become resigned to careers as patients and have *little motivation.* Prior to hospitalization many were kept at home because of the fear of exposure to the well-knit deaf community as "crazy". Thus there was a long latency prior to hospitalization interrupted only by intolerable disruptive behavior, not because the patient was so dangerous but because of fear by parents of their own murderous rage against the deaf progeny.

Parents' neglect of their despised child is indicated by the fact that few learned how to communicate with them by manual or other means. For the patient, destructive angry behavior was their only means of communicating. In our hospital this was infrequent; in fact patients (and parents) resisted discharge.

Our patients showed *severe ego defects* in object relations and had become isolated, lonely and distrustful of intrusion by others. They were passive and dependent, yet their controls over impulses were fragile. Many had early life traumata such as operations or injuries with pain. Because of faulty communications they could not understand the meaning of these experiences. In fact they were often deceived. Thus they feared the slightest encroachment on their bodies.

Individual therapy was handicapped by fear of intrusion especially by a doctor (who operates). More important was the patients' poor skills in oral or manual communication.

Writing was less personal and picture drawing decreased fearful affect. Interpretations were not understood unless they were concrete, concise, and in present tense. Insight and supportive therapy were very difficult but could be overcome by conversational, idiomatic language to begin with, and by active participation of the therapist in the patients' hospital life (transfers, blood-drawing, operations, jobs, etc.). The important problem was the patient's difficulties in expressing any affect, especially anger, either behaviorally or by signs. The use of ward meetings (musters) and participation in activities was more effective in loosening the defenses and denials of deaf patients.

Group therapy was attempted in an effort to attain some cohesion among deaf patients and to improve their personal identity. There was little success from the formal group sessions. Instead, groups of deaf patients could communicate well with each other and achieve a level of contentment, if mutually engaged in a common task such as planning an outing or preparing a meal.

Despite the severe difficulties summarized above, 60 percent of our patients returned home or to their communities. Only 40 percent had to be returned to the state hospital.

In the out-patient clinic where many of our hospitalized patients were followed and where less disturbed patients were directly accepted, the above difficulties were less severe. Yet as a group they demonstrated the characteristic isolation, denial, arrest of ego functions, paranoid tendencies, depression, sexual deviances and underachievement resulting from exposure to inefficient systems of education.

Private ambulatory care for a higher socio-economic class of patients revealed few differences. Patients denied their deafness and poor communications, with the illusion that if they tried hard enough their hearing and speech would improve. They revealed a failure of insight into contradictory expressions and seemingly failed to understand contingent "as if" propositions. These patients, as we observed in hospital and clinic, had never experienced a mourning process, "working through" their lack of hearing and deficient communication. This seems to be a necessary step in the prevention of the severe psychological disturbances of the deaf.

The families of the deaf adults and children were carefully studied and revealed the same basic characteristics. They used the deaf child as a focus of family conflict and an object for the projection of their own feelings. Their guilt feelings were overwhelming and they attempted to overcompensate by "spoiling" or infantilizing the child, or by treating him as if he had normal hearing. They failed to teach the child signs for pain and how to express feelings. In addition families have been under the threatening influence of "oralists" and failed to teach the child or to learn manual communication for themselves. The child too frequently became excommunicated.

New systems of *education* for deaf children are being devised for small groups and educational programs have been instituted for their mothers despite the resistance, often violent, of the pedagogical "establishment." Our researches show that the early *teaching of manual systems of communication* results in better educational achievement and superiority in reading and writing skills.

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Vernon, M., and Koh, S. D.: "Effects of early manual communication on deaf children's educational achievement, linguistic competence, oral skills, and psychological adjustment, completed and submitted to *Amer. Ann. Deaf.*

Vernon, M., and Koh, S. D.: "Effects of preschool education on deaf children: Oral, Manual, and None," data gathered and analyzed but not written up.